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CHEMIST AND DRUGGIST

ANNUAL SPECIAL ISSUE

JUNE 30 1962



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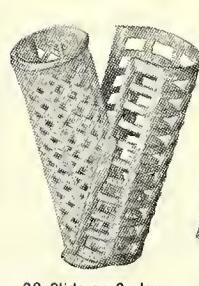


BY WOMEN
EVERYWHERE

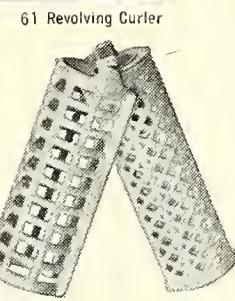
17 Bedtime Curler



61 Revolving Curler

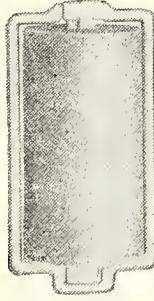


20 Slide on Curler



65 Foam Cushion Curler

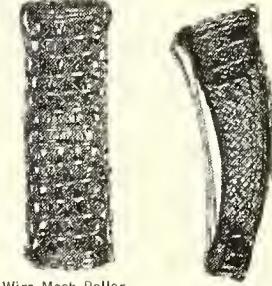
66 Plastic Roller Foundation



31FR French Roll Foundation



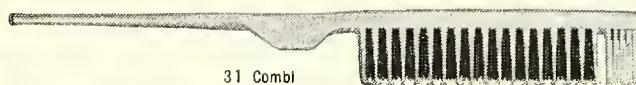
2 Wire Mesh Roller



29 Princess Comb



31 Combi



480 Curl Clip



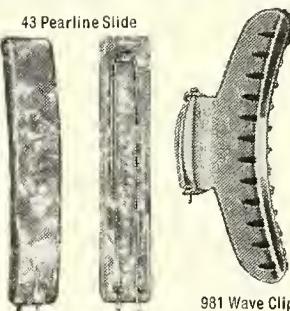
972/6 Sectioning Clip



Hair Grips



43 Pearline Slide



Hair Pin

477 Curl Clip

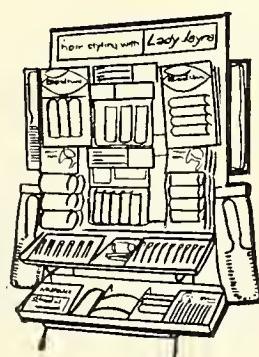
485 Curl Clip

247 Side Comb

981 Wave Clip

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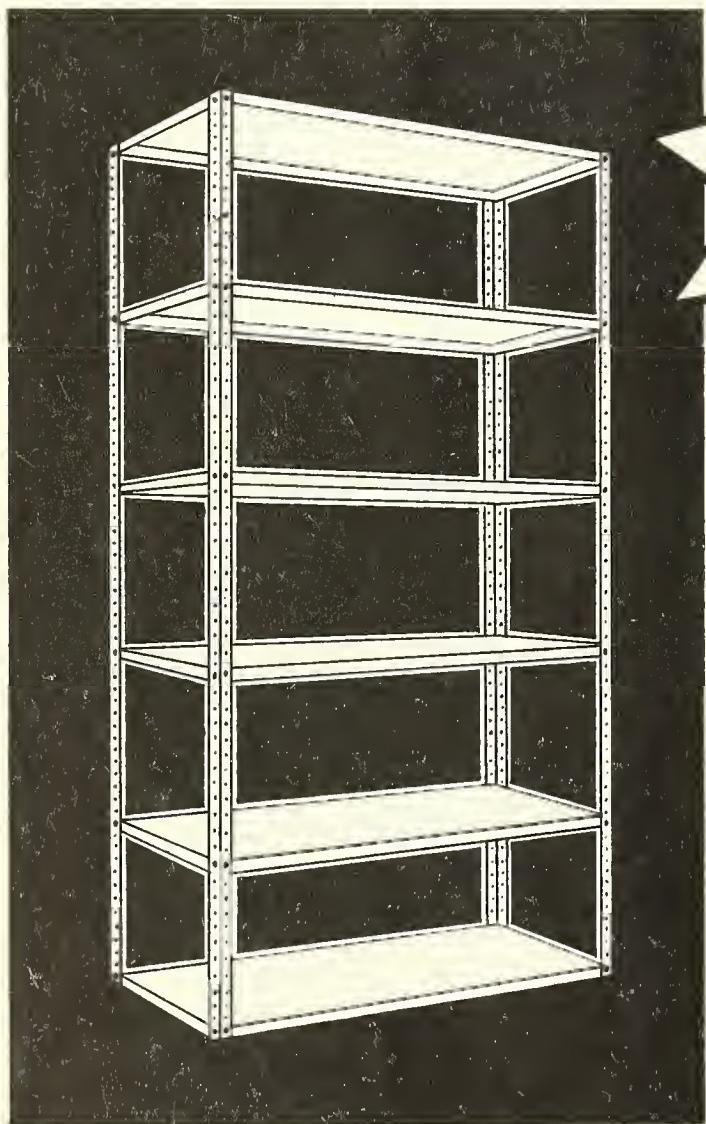
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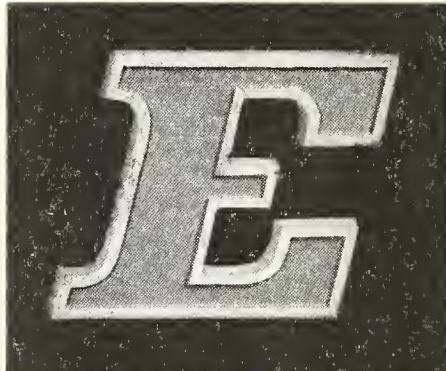
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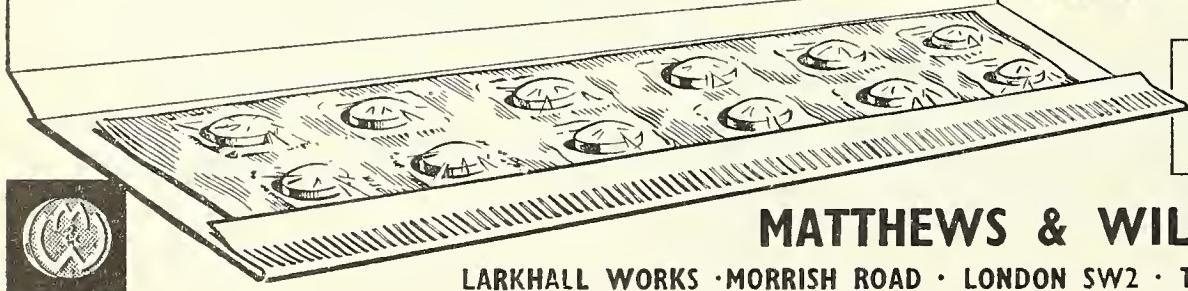
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from

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to

ADVERTISING AGENTS

Draft copy for immediate use in A.P., P.N.W., A.C.W. and C. & D.

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rendering with true to life results.

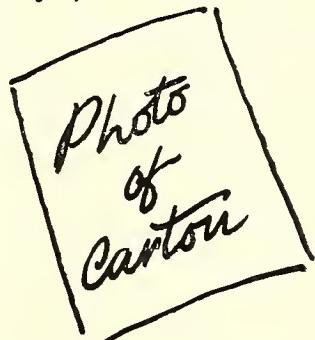
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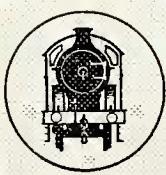
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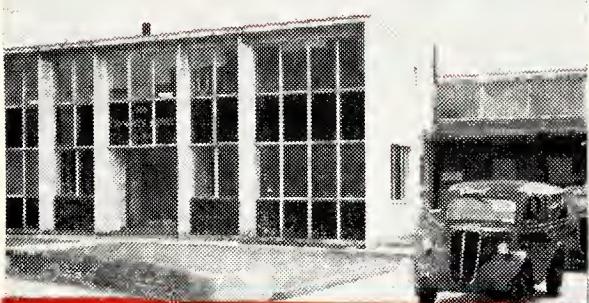
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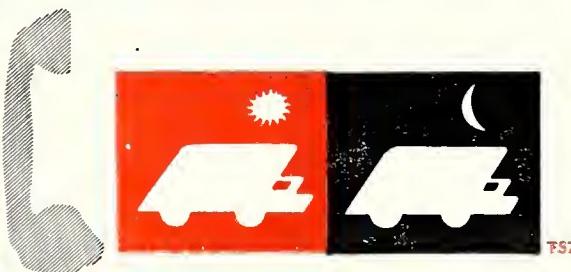
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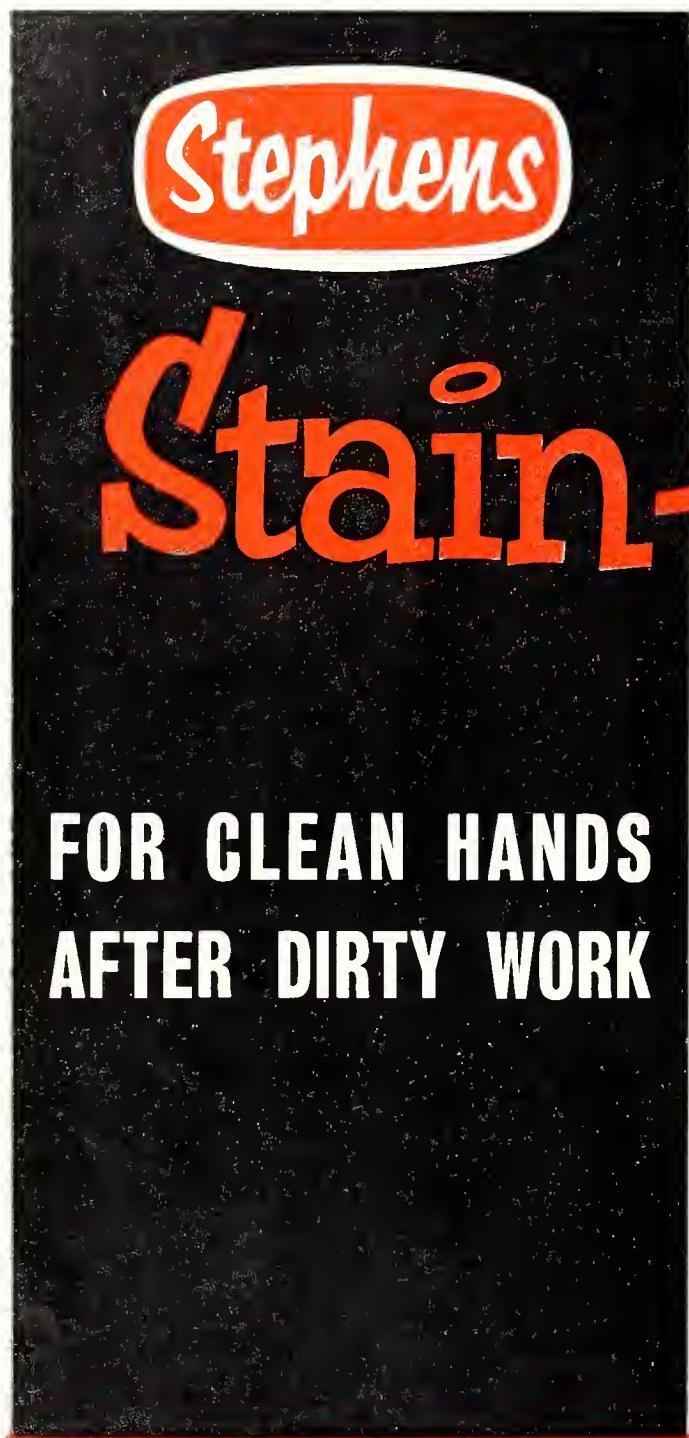
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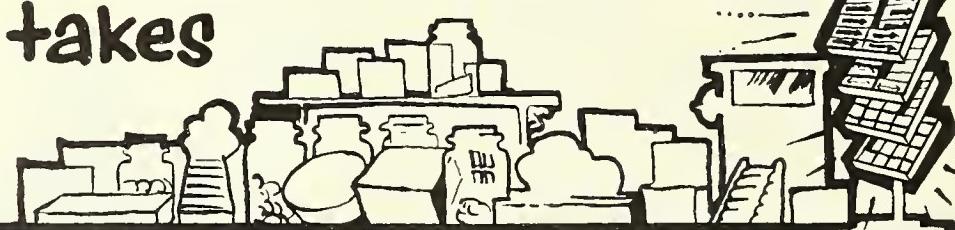


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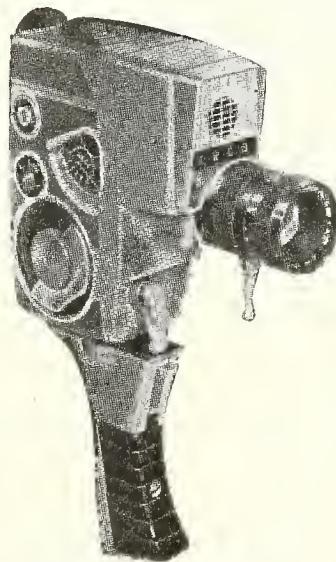
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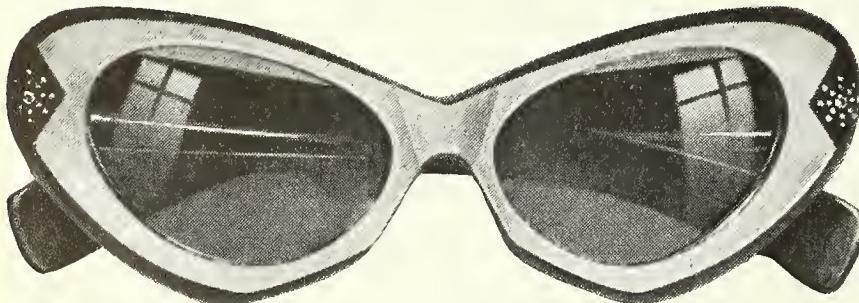
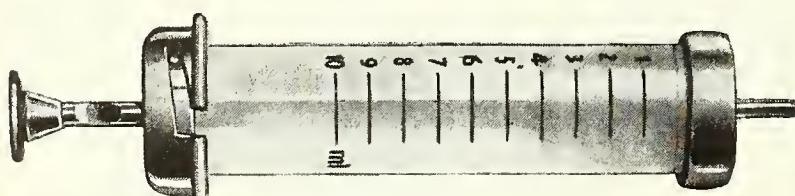


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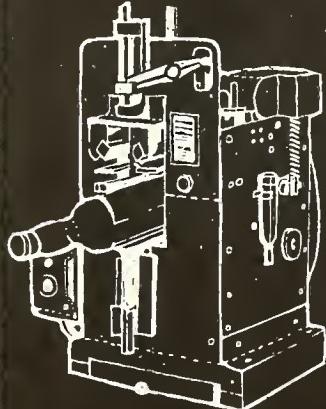
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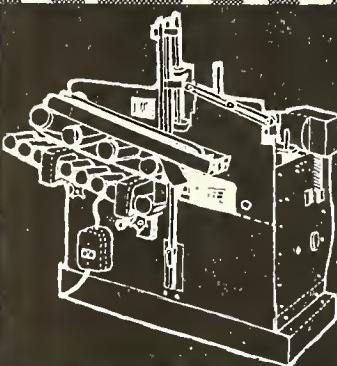
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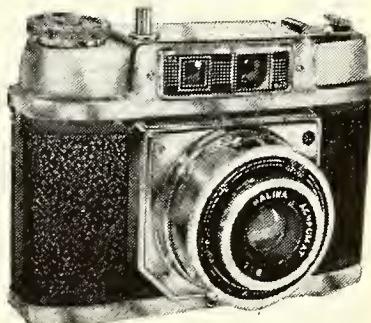


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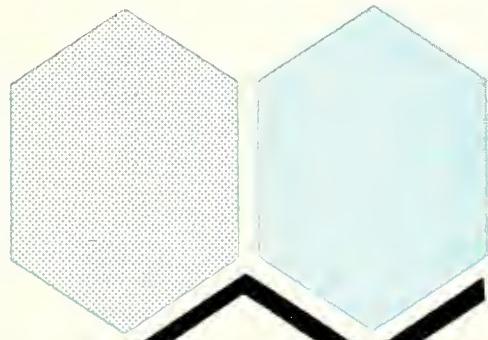
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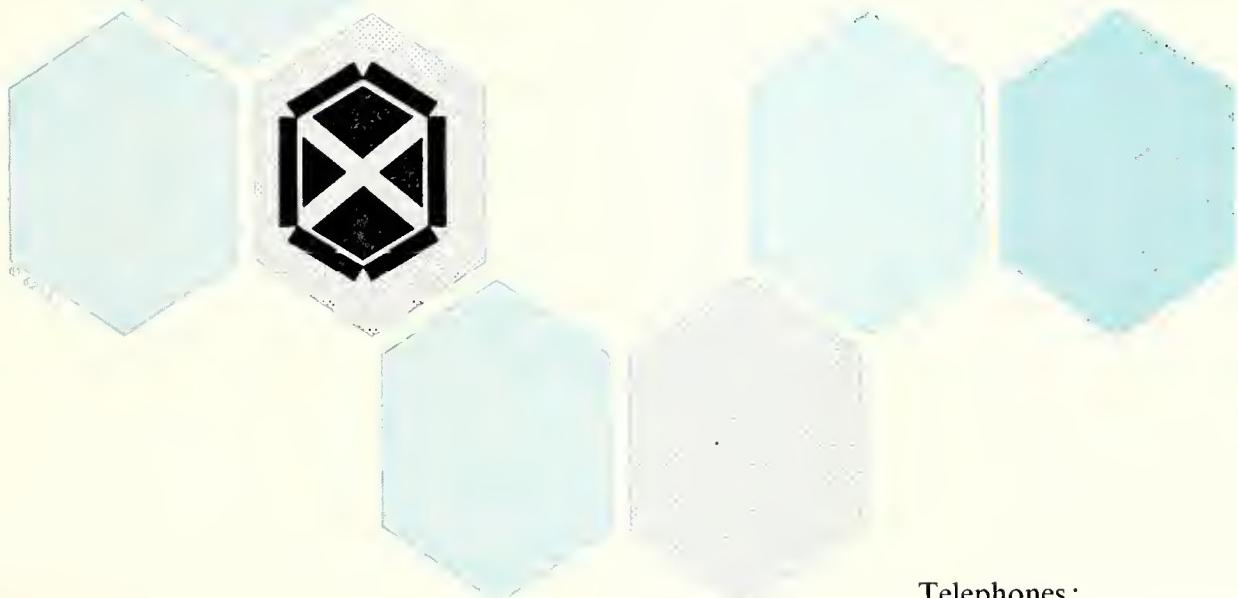
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" "	100 "	30'-	" "

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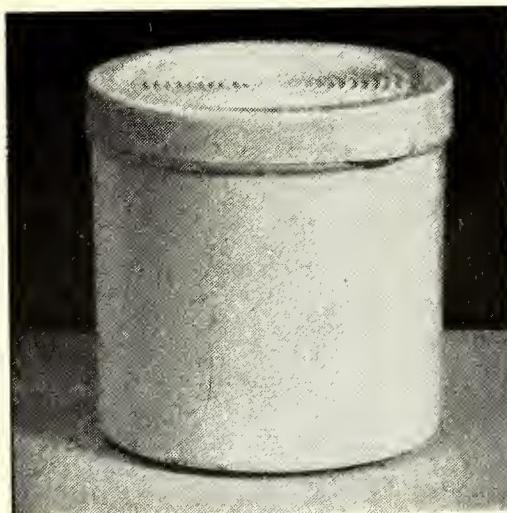
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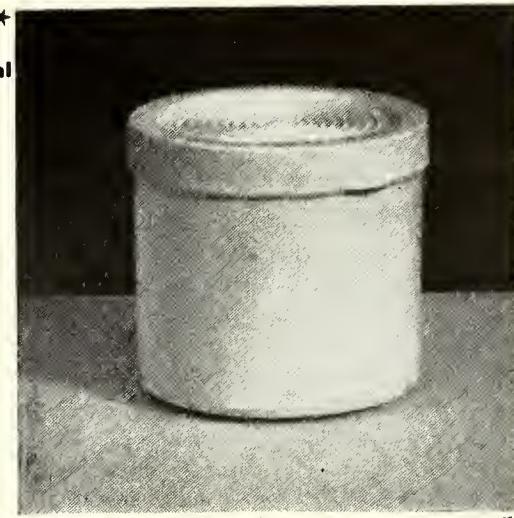
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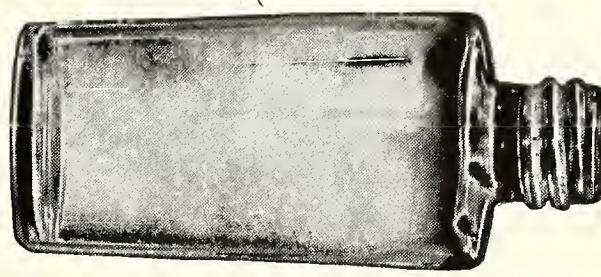
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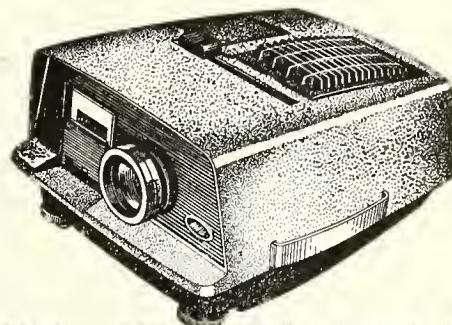
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Spare magazines 10/- each**ALDIS XT 434**

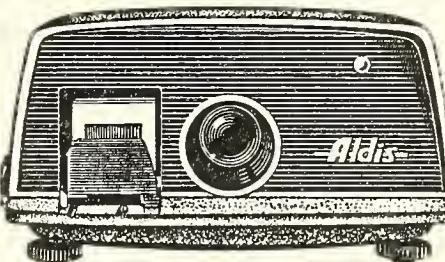
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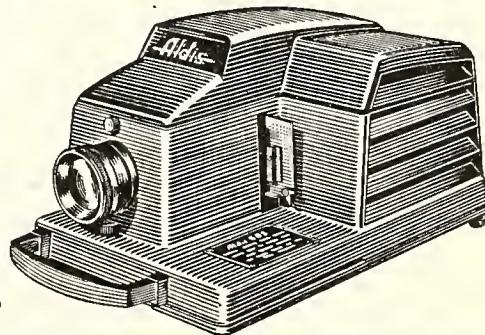
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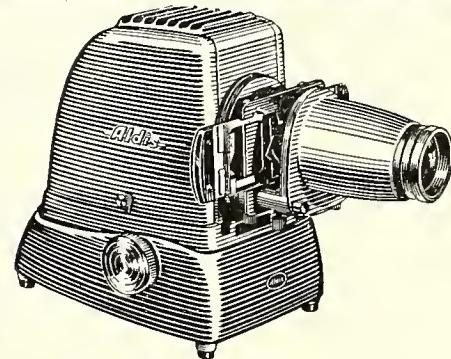
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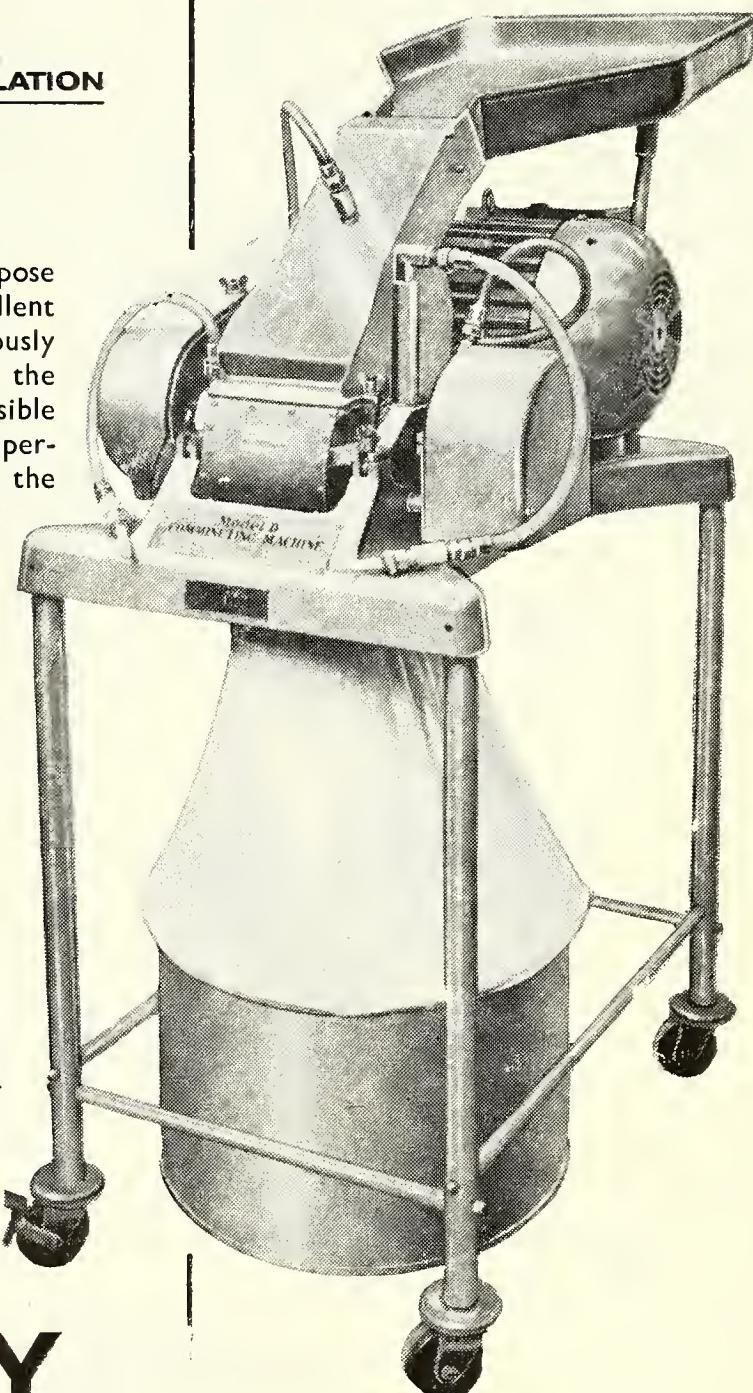
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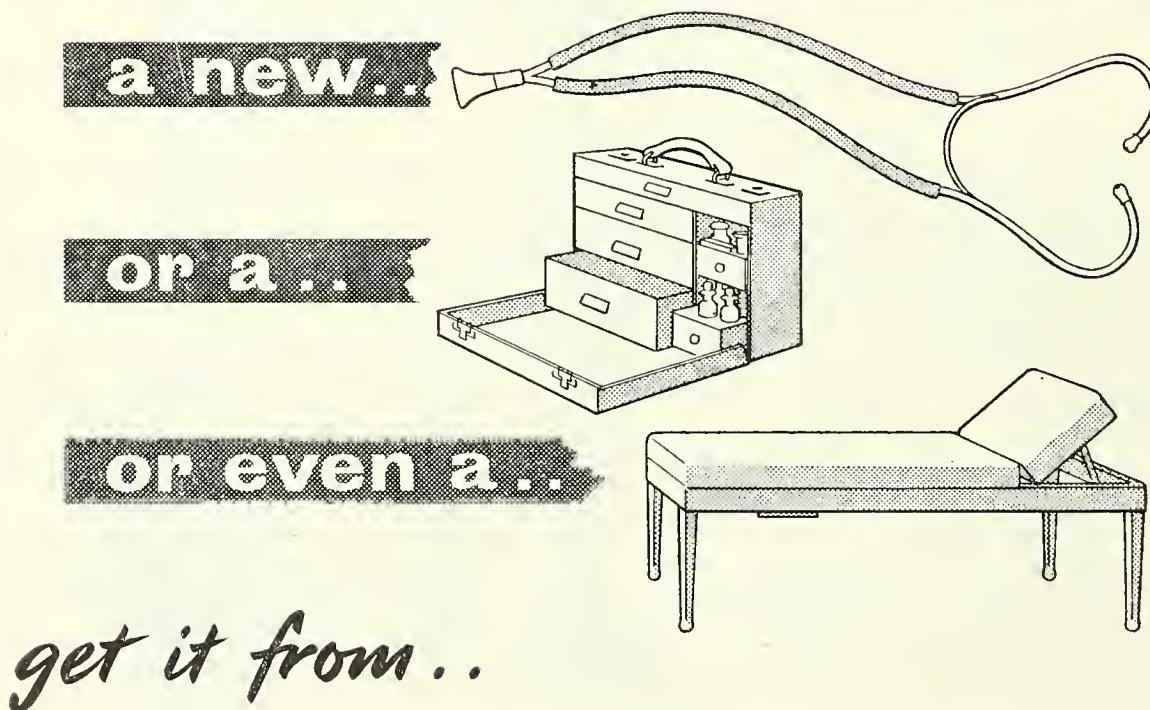


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THE CHEMIST AND DRUGGIST

ESTABLISHED 1859

THE WEEKLY NEWSPAPER FOR PHARMACY

and all sections of the drug, pharmaceutical, fine chemical, cosmetic, and allied industries

Official organ of the Pharmaceutical Society of Ireland and of the Pharmaceutical Society of Northern Ireland

ANNUAL SPECIAL ISSUE

Volume 177

June 30, 1962

No. 4298

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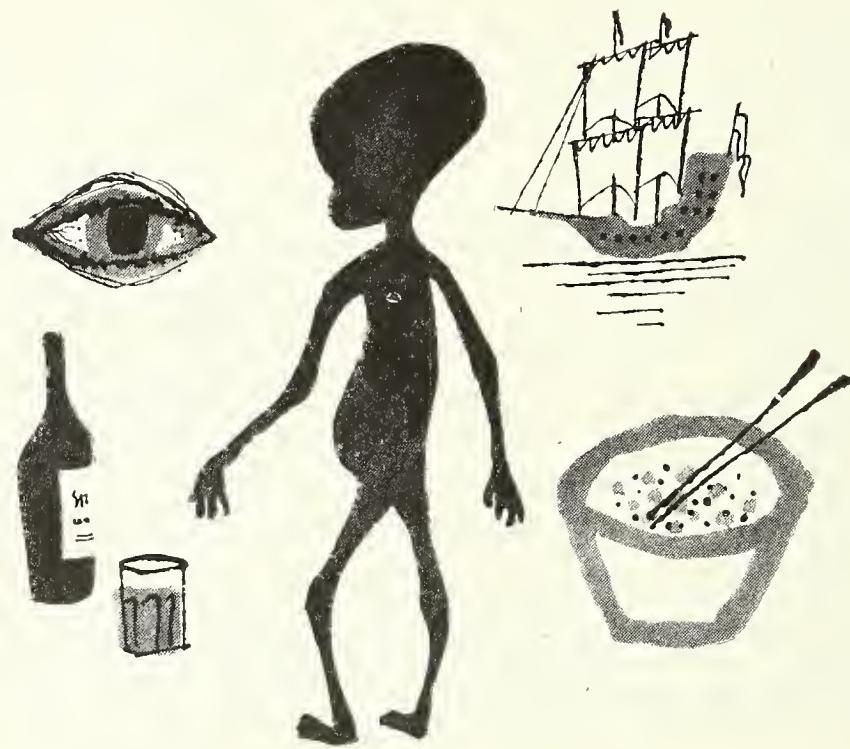
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The CHEMIST AND DRUGGIST

Volume 177

JUNE 30, 1962

No. 4298

Threat to Existing "R.P.M."

M.P.s TOLD OF CHEMISTS' "CONCERN"

THE Proprietary Articles Trade Association, in a statement sent to every Member of Parliament, criticises the Government for its two-year delay in announcing the conclusions it has drawn from the Board of Trade's "fact-finding" inquiry into resale price maintenance.

The Association states that pharmaceutical chemists, like others engaged in retail trade, have "been plunged into uncertainty" as to the Government's intentions to maintain or amend the existing law. The Association gives six reasons why the retail chemist views "with the utmost concern" the possible abolition of individual resale price maintenance on proprietary products.

(i) His two main functions—the dispensing of prescriptions and the "authorised selling of poisons"—represent the smallest and least profitable section of his turnover.

(ii) If he had to rely solely on the proceeds from those services, he would have to charge more for them.

(iii) Only the reasonable margin guaranteed to him from the sale of the numerous proprietary products, which make up the bulk of his trade, prevents that from happening.

(iv) Without that margin, the cost of the Health Service and to private patients must rise at once.

(v) The pharmacist's ability to earn a reasonable living is already under severe pressure. Rising costs, especially shop rents, are already driving many pharmacists off the main streets into the back streets, or to close down.

(vi) Modern dispensing is highly complex and responsible, and the pharmacist is entitled, as much as the physician, to a reasonably free mind so as to be able to concentrate on his professional duties.

The statement adds: "Continuance of the price-maintenance system is essential if the three sections of the pharmaceutical trade—manufacturers, wholesalers and retailers—are to be able to serve without diminished efficiency the health requirements of the public, including, as a first prerequisite, discharge of the duties they undertake in connection with the pharmaceutical service provisions of the National Health Service Act."

Retail Sales

BOARD OF TRADE STATISTICS

RECENTLY issued Board of Trade figures show that sales of chemists' goods by independent retailers were 7.8 per cent. higher in March than in

February and 0.9 per cent. higher than in March 1961. Multiple retailers' sales were 8.1 per cent. higher in March compared with February and 8.2 per cent. higher than in March 1961. Sales by Co-operative societies were 5.4 per cent. higher in March than in February but 0.9 per cent. lower than in March 1961. The figures do not allow for receipts under the National Health Service.

Control of Advertising

EXTENSION OF VOLUNTARY MEASURES

STEPS taken recently by the Proprietary Association of Great Britain and by the advertising profession to improve systems of voluntary control over advertising are outlined in the Association's forty-second report, presented to members at its annual meeting in London on June 21. To assist manufacturers in preparing advertising material, the Association's code-of-standards committee has compiled a series of notes referring to specific categories of products. Notes so far circulated are concerned with literature referring to treatments for rheumatism, laxatives and vitamin preparations. The Association has also been consulted by the Advertising Association on the preparation by members of that body of leaflets advertising vitamins and analgesics. The P.A.G.B. report endorses

the objectives of an autonomous Advertising Standards Authority to be set up under the chairmanship of Sir Arnold Plant (professor of commerce, University of London), "to promote and enforce throughout the United Kingdom the highest standards of advertising in all media so as to ensure in co-operation with all concerned that no advertising contravenes or offends against these standards."

N.H.S. Tribunal

A CONTRACTOR REMOVED FROM LIST

THE National Health Service Tribunal, in a report just published, has directed that the name of Ripley Webb, Ltd., 367 Lordship Lane, London, S.E.22, should be removed from Part II of the London Executive Council's Pharmaceutical List (suppliers of drugs (except poisons in Part I of the Poisons List) and/or appliances . . . other than registered pharmacists . . .), and should not be included in any corresponding list kept by any other Executive Council. The case was brought by the London Executive Council, and the Tribunal was composed of Sir Reginald Sharpe, Q.C. (chairman) and Messrs. I. H. Davies (deputy standing member) and D. W. Hudson (practitioner member) on November 17 and December 29, 1961. The Executive Council complained that the respondent delayed submitting prescriptions to the Pricing Bureau; that on nine specific occasions between June 13, 1958, and June 22, 1960, he dispensed medicines "otherwise than by or under the direct supervision of a registered pharmacist . . ."; that on four occasions between October 19, 1959, and May 14, 1960, a patient was supplied with an article that was "not as prescribed . . ."; that the respondent company held itself out



WELL-LIT: Stylised "mortars" frame four display windows and the "picture window" to attract customers to the Jamesburg pharmacy, Jamesburgh, New Jersey, U.S.A. The owner claims that increased lighting in the remodelled pharmacy has doubled turnover.

to dispense medicines, though not entitled to do so, by displaying to the public the word "dispensing" under the display notice . . . at Lordship Lane; that on August 21, 1956, the Minister of Health directed the Executive Council to withhold £26 5s. from the respondent's remuneration. It was also alleged that, between March 27, 1951, and October 15, 1959, Mr. George Herbert William Spedding, who held ninety-nine of the 100 £1 shares that constitute the capital of the company, had been convicted of eight offences under the Pharmacy Acts. The Tribunal's report states that the respondent was not present at the hearing, but there was no doubt that the company had been, and now was, controlled and managed solely by Mr. Spedding, and the Tribunal was unanimously of the opinion that, in view of the eight convictions, it was impossible to permit the respondent company to remain any longer on the Pharmaceutical List. The Tribunal also ordered that the company should pay the Executive Council's costs in regard to the inquiry. The Ministry of Health, in circulating the copy of the report of the Tribunal's findings, stated that an appeal had been received from Ripley Webb, Ltd., but was later withdrawn.

Plastics Industry

TRAINING GRANTS 1962

THE Trustees of the Plastics Industry Education Fund are inviting, from young men and women working in the plastics industry, applications for a limited number of training grants towards the cost of full-time study on an approved course leading to a degree, diploma or other equivalent qualification in science or technology, or in industrial design. Approved courses for full-time study include those leading to the graduateship of the Plastics Institute, degree courses in chemistry, physics and engineering, sandwich courses in similar subjects for the Diploma in Technology (Dip. Tech.) and certain courses in industrial design. Grants are usually made for periods of one year at a time, but applications for the renewal

of grants are considered provided the candidate is making satisfactory progress. The value of a grant is normally of the order of £100, but smaller sums will be awarded by the Training Grants Committee when other resources are available to the candidates. Applications must be submitted in writing to the secretary, The Plastics Industry Education Fund, 6 Mandeville Place, London, W.1, by July 14, from whom full details are available.

Science Film Congress

BRITISH APPLICATIONS INVITED

THE sixteenth annual congress of the International Scientific Film Association is being held in Warsaw, Poland, September 23-30. Films to be shown at the congress fall into three main categories: research, education and popularisation of science. Films submitted must have been completed since March 31, 1961, and must not have been shown at a previous congress. They may be of 35-mm. or 16-mm. gauge. Responsibility for selecting the British entry rests with the Scientific Film Association of Great Britain. Organisations with films or film material that they wish to have considered in this connection should apply for further particulars to the Association's general secretary, 55A Welbeck Street, London, W.1.

IRISH NEWS

THE REPUBLIC

Thalidomide Stocks

HEALTH DEPARTMENT'S REQUEST

CHEMISTS in the Republic of Ireland who may have stocks of thalidomide (Softenon) have been urged by the Department of Health to return them to their wholesalers or to destroy them. The Secretary of the Department, in a letter to the registrar of the Pharmaceutical Society of Ireland, wrote:

"I am directed by the Minister to state that, as you are probably aware, certain drugs have recently come under suspicion in connection with increases in the incidence of certain types of neonatal deformities. The drugs in

question are thalidomide, or Softenon, together with certain other preparations in which thalidomide is one of the constituents, viz.:—Nocto-Sediv, Entero-Sediv, Poly-Gripian and Predni-Sediv. . . . The agents for the manufacturers discontinued supply in January 1962, and circulated wholesale and retail chemists asking for the return of any stocks held by them. There is a possibility, however, that some stocks of these preparations may still be on hand with some chemists and it is desired to ensure that no further sales of any drugs containing thalidomide will be made.

Drugs Shipped

TIPPERARY COMPANY'S ACHIEVEMENT

A SHIPMENT to the Far East of 50 million tablets and 6 million units of injectable preparations was completed, ahead of schedule, on June 23, by Antigen, Ltd., Roscrea, co. Tipperary (see C. & D., April 7, p. 364). It represents the first part of the greatest single export order yet received for Irish medical goods. The order, announced officially earlier this year, called for the supply of 100 million tablets and 6 million units of injectable preparations. Production continues on the remaining 50 million tablets. Other current Antigen export orders include consignments for South Africa, East Nigeria, Cyrenaica, Kuwait, the Sudan and Jamaica. Those and other orders already received indicate an increase of at least 200 per cent. in the company's export business for 1962.

St. Joseph's Society

PHARMACY BRANCH MEMBERSHIP DRIVE

A WIDELY representative meeting of the pharmacy branch, St. Joseph's Young Priests' Society, held in Dublin on June 19, agreed to make an all-out drive to increase branch membership and to step-up collection of subscriptions so as to be able to provide for the education of fifteen students instead of seven, as at present. The attendance included Mr. J. G. Coleman (registrar, Pharmaceutical Society of Ireland) and Messrs. T. B. O'Sullivan (vice-president); M. Costello, C. Cremen, G. C. O'Neill, R. J. Semple (Council members), and F. Walshe (Medical Representatives' Association).

IRISH BREVITIES

THE REPUBLIC

THE annual meeting of the Irish Drug Association is being held in Jury's hotel, Dublin, at 8.30 p.m., on July 23.

THE Pharmacy Bill passed the Committee and Final Stages in the Senate on June 13 and has been forwarded to the President for his signature.

ACCOMPANIED by Mr. C. S. O'Connor (lecturer and examiner, College of Pharmacy, Dublin), and other members of the staff, a party of forty students of the College paid a visit to the premises of Antigen, Ltd., at Roscrea, co. Tipperary, on June 7.

NEGOTIATIONS are almost completed for the purchase by P. C. Cahill & Co., Ltd., wholesale manufacturing chemists, Dublin, of the interests of St. Dalmas (Ireland), Ltd., wholesale chemists, George's Quay, Cork. An official statement is expected to be released shortly.

GUILD OF PUBLIC PHARMACISTS

June meeting of Council

MR. W. MOTT was elected President and MR. E. J. FITCHETT Vice-president at a meeting of the council of the Guild of Public Pharmacists on June 23. Other officers were re-elected and the council decided to reappoint the various committees with few changes in their membership.

The council was pleased to accept a donation of £10 to Guild funds from a retired member who wished to show his appreciation of the work of the Guild.

The names of forty-six members were deleted from the roll for non-payment of subscriptions.

The council approved a recommendation that the title of the *Public Pharmacist* should be changed to *The Journal of Hospital Pharmacy* as from the first issue in 1963.

MR. C. H. PRESTON ROBINSON reported that the staff side secretary, General Whitley Council, had written to

the Minister of Health expressing concern that the Minister had stated in the House that he was not aware of any—certainly no substantial—disagreement by the staff side representatives with the scheme which the Minister intended to operate with regard to possible redundancy in the National Health Service. The Minister's reply had not been satisfactory in any way. It was reported that it had not yet been found possible to agree with the management side on the wording of the circular which will be issued regarding additional allowances to deputies of chief pharmacists who are in receipt of teaching hospital allowances and this was the reason for the delay in the issue of the circular.

Plans were agreed for informing members speedily about the arbitration award that was expected following the submission of the salaries claim to the Industrial Court.

NEWS IN BRIEF

THE June issue of *Hospital Abstracts* (H.M. Stationery Office, price 5s.) contains four contributions from the United States on subjects of pharmaceutical interest.

THE Traders' Road Transport Association, 1 Hay Hill, London, W.1, the national body for those firms operating their own commercial vehicles under a "C" licence, is organising an information service on transport and the Common Market.

CRITICAL reviews of progestational agents, oral hypoglycaemic compounds, vitamin D and dihydrotachysterol, sustained or long-acting preparations, effervescent potassium tablets, new penicillins and treatment costs of antibacterial drugs comprise the June issue of *Prescribers' Journal*.

BECAUSE of the lack of necessary data on the manpower of pharmacy in Canada, the Royal Commission on Health Services has retained Mr. T. M. Ross (associate secretary of the Canadian Pharmaceutical Association) to direct a study of manpower resources and future potential resources in the profession.

SPORT

Golf.—LIVERPOOL CHEMISTS' GOLFING SOCIETY, at Southport and Ainsdale golf club on May 23. Results: Allen & Hanbury Cup and prize, C. Owens, 104, 24, 80. Bayer prize, I. Jones, 91, 9, 82. Liverpool Chemists' Golfing Society prize, Dr. R. Joseph, 95, 12, 83.

LONDON CHEMISTS' GOLFING SOCIETY, at Bush Hill Park golf club on June 14. Medal and Stableford competitions. Results: Arthur H. Cox Prize (Medal Competition), R. M. Pierce-Williams (8), 70; Harker Stagg Prize (Stableford Competition), D. Spier (12), 34 points; Burgoyne Cup & Prize (Stableford runner-up), E. S. Hole (10), 32 points; Other leading scorers, J. G. Evans (18), 31 points; G. T. Morson (12), 31 points.

SOUTH LONDON AND SURREY PHARMACISTS' GOLFING SOCIETY. Forty-three members attended the meeting at Addington golf club on June 20 when a Stableford competition was played for the Captain's Prize. Results: 1, D. Hoborn (Walton Heath), 35 points; 2, H. Reynolds (Copthorne), 32 points; 3, J. Widocks (Croydon Hurst), 31 points. Seniors Prize, H. Duckering (Mapperley), 30 points. Scratch to seventeen handicap Prize, M. Lewis (Shirley Park), 30 points. Eighteen and over handicap prize, A. Seath (Croydon Hurst), 27 points. Best score on first nine holes, S. M. Hutchinson (Royal Blackheath). Best score on last nine holes, A. Recary (Croydon Hurst).

SOUTH MIDLANDS CHEMISTS' GOLFING SOCIETY, at Calcot Park golf club, Reading, on June 20. Inaugural meeting. Competition for Mapleton trophy and replica. Results: 1, R. Gibson, 69; 2, E. E. Lockyer, 71. Scratch prize, M. Ashelford, 71. Elected officers of the Society are as follows.—Captain, W. Parker; Treasurer, Mrs. N. Williams; Secretary, J. M. Christy, 62 Woodfield Drive, Pitt Corner, Winchester, Hants. (Telephone: Winchester 5384.)

LOCAL OFFICERS**PHARMACEUTICAL SOCIETY**

Reading Branch.—Chairman, Mrs. Nora Williams; Vice-chairman, B. D. Bird; Treasurer, P. M. Worling; Assistant Secretary, C. Howarth; Secretary, Miss Jean M. Livingstone, 231 Shinfield Road, Reading, Berks (Telephone: Reading 82850).

CHEMISTS' ASSOCIATIONS

Western Pharmacists.—Chairman, J. D. Singer; Vice-chairman, T. D. Whittet; Treasurer, C. Evans; Assistant Secretary, G. R. Battye; Social Secretary, S. J. Turner; General Secretary, A. A. Kennett, 34 Notting Hill Gate, London, W.11 (Telephone: Bayswater 5188).

TOPICAL REFLECTIONS

By Xrayser

A find

Pharmacy is a hard taskmaster, allowing the practitioner the minimum of leisure for a like reward. Even the moments at a second-hand bookstall have to be snatched. Not for the pharmacist the satisfaction of browsing at ease, tasting a little here and there. But only recently a fleeting stop at one such bookstall revealed that the inevitable and permanent tenant, Samuel Smiles, had acquired a new neighbour, and a hasty glance at the index disclosed some promising material. It was none other than an eighteenth-century encyclopaedia of medicine (title-page missing) and the bookstall proprietor took the money with an expression which conveyed that this was indeed his lucky day. So when the pharmacy closed for the night I eschewed golf and gardening and gave myself to the writings of an ancestor far removed in space and time. The scope of the work may be judged from the index, which is comprehensive to a degree. For example: "Inns, the great danger of meeting with damp beds in them." (No one would quarrel with that statement.) Some of the entries are quaint and others full of common sense. Without such distinction, I list a few of them. *Carriages*, the indulgence of a sacrifice of health to vanity. (Surely that item needs amplification. "How ridiculous to a person unacquainted with modern luxury, to see a fat carcase, over-run with diseases occasioned by inactivity, dragged through the streets by half a dozen horses!") How completely out of date that statement is! Today we use the car.

Shoes and ships

Not so far removed from our own age is the heading: *Shoes* tight, the bad consequences resulting from; the high heels of women's shoes. (It is obligatory to consult the text again. "How a small foot came to be reckoned genteel, I will not pretend to say; but certain it is that this notion has made many persons lame. Nor is the high heel less hurtful than the narrow toe. A lady may seem taller for walking on her tiptoes, but she will never walk well in this manner. It strains her joints, distorts her limbs, and utterly destroys all her ease and gracefulness of motion: it is entirely owing to shoes with high heels and narrow toes that not one female in ten can be said to walk well.") The advice has gone unheeded. Then there is elegant medicine. *Millipedes*, how to administer for the hooping cough. "Those who chuse to make use of these insects may infuse two ounces of them bruised in an English pint of small white wine for one night. Afterwards the liquor may be strained through a cloth, and a tablespoonful of it given to the patient three or four times a day." Many of the entries might take their place as aphorisms. "Midwifery ought not to be allowed to be practised by any woman not properly qualified. Meals ought to be taken at regular times. Mechanics ought to employ their leisure hours in gardening. Houses ought to be built in a dry situation. Generals of armies ought to consult the health of the men they command. Sailors ought to guard against wet clothes." To browse through the index is to understand the walrus and the time having come to talk of many things.

Amusement

Gardening, the index assures me, is a wholesome amusement for sedentary persons. (Perhaps that is why I have never been able to derive entertainment from the pursuit). Nothing is outside of the author's orbit, from jail fever to the danger to health resulting from attending funerals; from the condition of hysterics produced by drinking tea to the reputed virtues of artificial magnets in the toothache. But what is this? "Love, why perhaps the strongest of all the passions—is not rapid in its progress, and may therefore, be guarded against at its commencement—to pretend to it for amusement, cruelty to the object." Here, surely, on p. 123, is the kernel of the whole work! I thumbed rapidly to the prescribed section, only to find that someone had been there before me, and of some 650 pages, only p. 123 is missing. I hope that the abstractor found his desecration of value. Nothing for it, then, but to turn to "Of Exercise," to learn that golf is a diversion very common in North Britain.

LEGAL REPORTS

Passing Off

In the High Court, London, on June 19, Mr. Harry Dalton, trading as Fiora Boutique, Edgbaston Road, Smethwick, Birmingham, submitted to a perpetual order restraining him from infringing trade marks of Chanel, Ltd., 2 Old Bond Street, London, W.1, and from passing off perfume not of Chanel's manufacture as Chanel's perfume. Mr. Dalton, who appeared in person, also consented to an inquiry as to damages and to payment of costs. Mr. Justice Pennycuick: One of the exhibits is a leaking bottle of scent. Counsel for Chanel: I apologise.

Secrets Allegedly Sold to Italy

In the New York, U.S.A., Supreme Court on June 19 the American Cyanamid Co. began proceedings alleging that their secret processes for the manufacture of Lederle brand broad-spectrum antibiotics had been stolen during recent years and sold to Italian and other companies for large sums of money. The proceedings were against Dr. Sidney M. Fox and Kim Laboratories, Inc. Dr. Fox was a "development chemist and group leader" in the chemical process improvement department of the company's Lederle Laboratories division, Pearl River, New York, until he left the company during 1959. Dr. Fox was alleged to have induced John Cancelarich, a development engineer, also employed until 1959 by Messrs. Lederle, to steal cultures of micro-organisms, samples of compounds, and technical data used in the manufacture of broad-spectrum antibiotics. In a sworn affidavit Cancelarich stated that Kim Laboratories had been formed to engage in the sale and marketing of chemicals and laboratory equipment, "and in providing consulting services with respect to antibiotics and steroids to Italian and Israeli concerns." Cancelarich also described how he stole the samples and copied the confidential technical information. He alleged that Dr. Fox had illegally sold cultures used to prepare demethylchlor-tetracycline and gave details of the manufacturing process to Lepetit, S.p.A., Milan, Italy, for \$110,000. Similar commercial arrangements were said to have been agreed with representatives of Pierrel, S.p.A., Milan, and Leo Industrie Chimiche Farmaceutiche, Rome, and Istituto Biochimico Italiano, Milan, involving payments of around \$50,000 and royalties in each case. In 1960 Cancelarich became disillusioned with the prospects for Kim Laboratories because Fox had failed to carry out his agreement to provide the necessary finance, and the company's operations were being carried out "on a shoestring basis." The hearing continues.

A statement issued by Mr. O. N. Williams (managing director, Cyanamid of Great Britain, Ltd., Bush House, Aldwych, London, W.C.2), on June 26, refers to the British Government's contracts for supplies of antibiotics under Section 46 of the Patents Act and adds "We have now asked the Association of the British Pharmaceutical Industry to examine the implications in this

country of the New York Supreme Court proceedings. . . . As a matter of courtesy . . . we also drew the Ministry of Health's attention to the same case."

COMPANY NEWS

Previous year's figures in parentheses

SMITH & NEPHEW ASSOCIATED COMPANIES, LTD.—Group sales for the first twelve weeks of 1962 were 9½ per cent. above the comparable 1961 period. Group profit, at £640,000, is 12½ per cent. higher. Capital increased on May 8 to £11,500,000 by the creation of a further 15 million Ordinary shares of 4s. each.

ASPRO-NICHOLAS LTD.—Group profit for year ended March 31 is £1,078,170 (£1,127,734). Although sales were up they were much below expectations, particularly in United Kingdom and France, states the chairman (Mr. Maurice A. Nicholas). The high bank rate and restriction of credit induced the lowering of stocks at both wholesale and retail level in the United Kingdom. For different reasons the company were also affected by reduction in stock levels in the trade in France and in Germany. "I must report a failure of our operations to date in the North American market. Over the past two years, losses in excess of \$1 million have been incurred which are not allowed against the group profit for income tax purposes. In consequence, the tax rate for the year is 67 per cent. of group profit. Costs, involving compensation and removal expenses in the final stages of integrating the Griffiths Hughes business, exceeded expectations. The chairman adds: "Your board feel fully justified in maintaining the same rate of dividend and, in consequence, it has declared a fourth quarterly dividend of 3½ per cent. making a total for the year of 14 per cent."

LAPORTE INDUSTRIES, LTD.—The group has spent the record figure of just over £4 millions on extensions and additions to fixed assets during the year ended March 31, reports the chairman (Mr. P. D. O'Brien), in his annual statement. As already announced (C. & D., June 9, p. 627), there was a decrease of £452,400 to £2,881,125 in group income, the latter figure including the results of two newly acquired subsidiaries, Howards & Sons, Ltd., and Elektrochemische Werke München, A.G. In his report of subsidiary companies' operations, he refers to surplus production capacity both in Britain and in Europe. "Nowhere has this been more marked or more severe than in Howards & Sons, Ltd., and Laporte Titanium, Ltd." Mr. O'Brien reiterates that the acquisition of Howards "provided a means of entry into the organic field of chemical manufacture which we believe will expand more rapidly than any other." Howards spent some £900,000 on capital additions and a similar amount remained to be spent to complete projects already authorised. Laporte Chemicals, Ltd., had a successful year and made a substantial contribution to group income. The progress of the organic process plant at Warrington for making hydrogen peroxide in

its four years of operation has been such as to make the electrolytic plant now obsolete in the United Kingdom. In another reference to the new process, the chairman says, "We believe that our plants for the manufacture of hydrogen peroxide by the organic route are the most efficient in the world and that our hydrogen peroxide technology is the most advanced. Substantial improvements in this technology have been discovered and developed."

BUSINESS CHANGES

CHESTER-LE-STREET CO-OPERATIVE SOCIETY, LTD., co. Durham, recently transferred their pharmacy department from their main store to separate premises nearby.

MR. A. E. WESTON, M.P.S., 6 Hanger Green, London, W.5, has sold his pharmacy to F. & R. Amigo, Ltd., who will continue to trade at that address as A. E. Weston. The take-over date is July 16.

MARRIAGES

KEEGAN — MAYOCK. — At St. Theresa's Roman Catholic Church, Belfast, Northern Ireland, recently, John Gerard Keegan, M.P.S.N.I., 46 Crocnamack Road, Portrush, co. Antrim, to Mary Patricia Mayock, Belfast.

DEATHS

CORRIE. — On June 8, Mr. William Reed Corrie, M.P.S.N.I., 12 Park Parade, Lisburn. Mr. Corrie qualified in Dublin in 1913, and registered in Northern Ireland in 1926. Until he retired a short time ago, he had acted for many years as superintendent pharmacist of Messrs. Alex. Boyd and Co., Ltd., Castle Buildings, Lisburn.

JONES. — On June 4, Mr. Glynfrwel Elfret Jones, M.P.S., 5 Madrid Road, Guildford, Surrey. Mr. Jones, who qualified in 1925, was a territorial manager for Timothy Whites & Taylors, Ltd., in South-east England, before opening his pharmacy at Guildford. He was a past chairman of the Guildford Branch of the Society and was mayor of Guildford in 1961.

LAFFAN. — On June 13, Mr. Richard Laffan, M.P.S.I., Miltown-Malbay, co. Clare. Mr. Laffan, who qualified in May 1921, was a well-known pharmacist and had carried on a successful pharmacy in Miltown - Malbay for many years.

PEARSON. — On June 8, Miss Kate Marian Pearson, M.P.S., Guildown, Trenode Avenue, Combe Martin, Devon, aged sixty-three. Miss Pearson, who qualified in 1922, was formerly chief pharmacist at the Belgrave Hospital for Children.

SUMNER. — On June 10, Mr. George Hubbard Sumner, F.P.S., 27 Station Road, Rickmansworth, Herts. Mr. Sumner, who qualified in 1921, was a demonstrator in the Pharmaceutical Society's school of pharmacy for four years from 1924 and was appointed a member of the pharmacy subcommittee of the British Pharmaceutical Codex Revision Committee in 1937. He was in business with his sister Miss M. A. G. Sumner, M.P.S.

NEW PRODUCTS AND PACKS

For Treating Alcoholism.—Lederle Laboratories division of Cyanamid of Great Britain, Ltd., Bush House, Aldwych, London, W.C.2, announce the introduction of a new product, Abstem tablets, each containing 50 mgm. of calcium carbimide buffered with citric acid. Abstem is intended for use as an adjunct in the treatment of alcoholism. The pack is a bottle of 100.

An Eight-dose Pack.—Westminster Laboratories, Ltd., Chalcot Road, Regents Park, London, N.W.1, are introducing a new 80-gm. (eight-dose) pack for Pripsen. The new pack is designed to provide sufficient doses for treatment of a whole family. A dose measure is provided. The risk of reinfection from ova in household dust and bedding, following elimination of the worms, requires a second dose after two weeks.

Anabolic Steroid by Mouth.—Pharmaceuticals (London), Ltd., Victoria Way, Burgess Hill, Sussex, offer Primobolan depot, now presented as Primobolan tablets for oral use. They are claimed to advance much further the dissociation of the anabolic action from undesirable hormonal effects, making the product suitable for women and children. The tablets are being marketed in 5-mgm. strength for general use and 1-mgm. strength for children. The tablets are issued in containers of twenty, 100 and 500 and of thirty, 100 and 500 respectively.

Two-stage Tablet Against Asthma.—Moore Medicinal Products, Ltd., Waverley House, Aberdeen, announce the introduction of a new speciality Iso-Bron tablet, a two-stage tablet, providing both immediate and sustained relief in asthma and chronic bronchitis. Each tablet contains 15 mgm. of isoprenaline sulphate, 36 mgm. of 1-n-methylephedrine hydrochloride, and 130 mgm. of theophylline. The methylephedrine and the theophylline are contained in the core of the tablet, the isoprenaline is in the outer coating. The pack is a bottle of twenty-five.

Ear Drops.—For the local treatment of otitis, McNeil Laboratories (division of Ortho Pharmaceutical, Ltd.), Saunderton, Bucks, have produced a new product Ciloprine containing in a glycerin solution 0.83 per cent. w/v of sodium 4 - amino - 4' - carboxymethylaminodiphenyl sulphone and 0.41 per cent. w/v of NN' - di(hydroxymethyl) urea. Ciloprine is understood to be specially useful in the treatment of subacute and chronic suppurating otitis media and an effective adjuvant in treating most cases of acute otitis media. It contains a compound for which a wide bactericidal spectrum (retained in the presence of serum and active against haemolytic and non-haemolytic streptococci and staphylococci, pneumococci, coliforms and other organisms) is claimed. Ciloprine is issued in bottle containing 5 mils together with an ear pipette.

Disinfectant in Squeeze Pack.—Jeyes (Sales), Ltd., River Road, Barking, Essex, announce that new Jeypine, "the first-ever disinfectant in a plastic squeeze pack," is now available nationally. The specially designed and un-

breakable green pack enables a controlled jet of Jeypine to be directed "right down to normally inaccessible danger spots." The pack holds 12 oz. and is issued in case of twelve.

Hot Wax Bandage.—"Wax-A-Pain," 30 Topsfield Parade, London, N.8,



draw attention to their new improved Wax-a-pain hot wax bandage for pain relief. Its size (rolled) is 8 x 2 in.; its area 160 sq. in.

Vitaminised Sweets.—A newly introduced product of A. L. Simpkin & Co., Ltd., Hunter Road, Sheffield, 6, is Koola fruits "with extra vitamin C" (10 mgm. per tablet). They are sent out in a display outer of 4 doz.

A New Strip Dressing Series.—Feature of a new series of strip dressings by Dalmas, Ltd., 215 Charles Street, Leicester, is a polythene pack with reseal closure. The pack contains 4 doz. display outers, assorted: 2 doz. elastic-backed, 1 doz. waterproof-backed, and 1 doz. rigid backed (non-stretch) with boric medication.

Introductory Offer.—A Pal Injectomatic razor and five new Pal premium-



edge injector blades are offered together in a special introductory offer by Ever-Ready Razor Products, Ltd., 26 Bedford Row, London, W.C.1.

TRADE NOTES

Selling Agents.—Selling agents for the products of Kay Brothers, Stockport (including Kay's linseed compound, are now Meltonian Wren, Ltd., Watford, Herts.

Taxable.—Uni-Pharma, Ltd., 229a Shaftesbury Avenue, London, W.C.1, state that the Customs and Excise authorities have ruled that the dispensing packs of their preparation Lobidan are subject to purchase tax.

Not Implicated.—R. P. Scherer, Ltd., 216 Bath Road, Slough, Bucks, have issued a statement pointing out that the halibut-liver oil capsules that were the subject of a prosecution recently at Berkeley, Glos, were not of their manufacture.

Continental Specialities.—Arrangements have been made for Roberts Chemists (Bond Street), Ltd., 76 New Bond Street, London, W.1, once again to accept orders for Continental "ethical" proprietary medicines. Orders are being executed with the least possible delay and at lowest possible prices ruling at time of importation.

Calcium Dosage.—Sandoz Products, Ltd., 23 Great Castle Street, London, W.1, point out that the elemental calcium content in calcium-Sandoz effervescent tablets is equivalent to 0.38 gm. and not as stated in a recent paragraph in these columns. The value of the product is the massive dose of calcium that it enables to be administered in a form acceptable to patients requiring a high calcium supplement over a long period.

Zinc Oxide Supplies Unaffected.—R. W. Greeff & Co., Ltd., 31 Gresham Street, London, E.C.2, point out that recent widespread publicity given to a fire at Barking which was said to have caused considerable damage to a zinc oxide factory was inaccurate. The works of their principals' were not affected in any way by the fire which was actually on adjoining premises. They reassure all customers that deliveries of Barking zinc oxide will not be interrupted.

Bonus Offers

MEGGESON & CO., LTD., London, S.E.15. Meggeson pastilles (glycerin and blackcurrant; glycerin, lemon and honey; Gee's linctus); Meggezones, children's Meggezones and Meggeson dyspepsia tablets. Twelve tins Meggeson pastilles (any of the three varieties) on order value £12.

W. B. CARTWRIGHT, LTD., Rawdon, Leeds. Aerosols. Lady Gay hair set spray and tint Glo; Captain hair cream; May Breezes (air refresher); Insectox fly spray; Casino super tan spray; lavender mothproofer; and Easy-On spray starch. Twelve invoiced as ten on order for seventy-two and over including six Captain hair cream. Twelve invoiced as eleven on order for thirty-six or more including six Captain hair cream.

INFORMATION WANTED

The Editor would appreciate information about the following:

Calycanthus Adam eau de Cologne
Allagrain

Correspondence

Letters when received must bear the name and address of the sender, not necessarily for publication. The Editor does not hold himself responsible for the views expressed.

Parliamentary Language

SIR.—Is your Parliamentary correspondent supposed to be reporting news or writing an editorial comment? If the former, he has no right to start off with the slanted statement, "Lady Summerskill dealt another below-the-belt blow at the pharmaceutical industry." If the latter, he might at least be sensible. Which of Lady Summerskill's statements does he consider to be "below-the belt"? Was it that doctors were "deluged every day with highly coloured advertisements and a constant stream of smooth-tongued commercial travellers wasted the doctors' precious time"; that the oral contraceptive promised a "colossal margin of profit"; that the manufacturers were "showing a reckless haste in this country and abroad"; or that present oral contraceptives can have undesirable side-effects? All these statements appear to me to be fair comment.

A. J. W. WILLIAMS,
Luton, Beds

A Word in the Right Place

SIR.—I was pleased to read that some individuals do try and explain to the general public and, no doubt, to the members of the Government and Opposition, the dire situation the small retailer will find himself in should the provisions of section 25 of the Restrictive Trade Practices Act be abolished. A little time ago I wrote the Conservative Party headquarters in London the following letter, which was courteously acknowledged and, I trust, duly placed before the appropriate policy-making committee:—

As a small trader (retail chemists and photographic dealers) I was most disturbed to read in this morning's *Daily Mail* a prediction that this Conservative Government intended to remove "resale price maintenance," which permits manufacturers to control the retail price of their products and at the same time enables such businesses as mine to pay reasonable wages and maintain a good personal service, so essential to our type of business. To some 500,000 shopkeepers this is anything but welcome news. The Conservative Party does not discourage trade unions, with their collective bargaining power, but it would seem they will soon deny this same freedom to manufacturers and retailers, the majority of whom have been staunch supporters of the Party. It really does not make sense to me, as a lifelong Conservative. At the moment I feel as many did at Orpington recently. In order to add a few shillings in the pockets of the general public—and millions to the chain supermarkets, you will cripple and embitter a solid and generally more responsible section of the community—the small shopkeeper."

Let us all write our Members of Parliament expressing our feeling in this matter.

G. V. SEANOR, Director,
H. W. SELBY, LTD.,
Haywards Heath, Sussex

The Murley Movement

SIR.—As a younger pharmacist, I was very sorry to read in Mr. Moss's letter (*C. & D.*, June 16, p. 658) that he believes the followers of Mr. Murley are small in number and that they comprise of only "bands of enthusiasts from certain well-defined areas." This I find most depressing, as I had ventured to hope that at long last many pharmacists had roused themselves into action with the common aim of trying to rectify some of the deep and fundamental faults which have bedevilled pharmacy for the past fifty years, and that there was now a determination amongst us to make a pharmaceutical world in which young men and women with university degrees in pharmacy could happily live. It seems to me that Mr. Moss, in common with several of our pharmaceutical leaders, grossly underestimates the situation. They insist on viewing this movement as a small explosion triggered off by the Minister of Health's lack of sympathy to our N.H.S. claim. In my view there is no doubt that the acute anxiety exhibited by many members goes much deeper than they seem prepared to accept. It disturbs me to see that our elder statesmen do not accept the fact that the N.H.S. claim *débâcle* is but one symptom of a great sickness affecting pharmacy today, which many members wish to ruthlessly cut out by radical reform. That is the only course for such a malignant malady and one which must not be allowed to persist if retail pharmacy is to survive. Mr. Murley and his followers are visionaries, not unlike the social reformers of the last century—the Chartist Rioters and the Tolpuddle Martyrs—who thought big, but who were none the less realists. History recalls that these people were mighty inconvenient to the leaders of their day, but it has also shown that they got what they wanted in spite of almost unsurmountable opposition. Their militant and unflinching determination finally won for them the social reforms we now enjoy. Mr. Moss, by contrast, appears to hold up his hands at such pharmaceutical reformers, and counsels caution and re-thinking, and even suggests that we could not possibly have legislation to discipline pharmacists even if it were for the good of pharmacy as a whole, and he implies in his letter that, after all, things are not so bad with pharmacy that some adjustments and negotiations could not put right. Let the Council of the Society press for legislation to implement the motions we have passed at the many and various meetings in the past ten years. Pharmacy so badly needs strong forceful leaders not afraid of radical change and with the determination to bring these changes about even if they appear at first to be an idealistic impossibility. If we can once achieve these fundamental reforms, the problems of N.H.S. claims, commissions in the Forces, and general status of the pharmacist in hos-

pitals as well as in shops would quickly resolve themselves. It would be exciting to think that we could, even now, put our history of non-achievement behind us, and begin what could be a retail pharmacy reformation. I only hope the Murley Movement does not become the Murley Martyrs for a lost cause.

I. B. THOMAS,
Lyminge, nr. Folkestone

Correspondents Corrected

SIR.—My letter to you (*C. & D.*, June 16, p. 658) was intended solely to amplify the statement which I made at the recent Pharmaceutical Committee conference, and then only so far as was necessary to deal with fundamental points where I felt that Mr. Murley was at fault. It was not, and still is not, my intention to engage in contentious correspondence in my capacity as chairman of the Central N.H.S. (Chemist Contractors) Committee. I must, however, for the purposes of the record correct certain statements appearing in the letter over the signatures of Messrs. Hiatt, Creedy, Green and Inness-Chaytor. I did not say in my letter, nor did I even imply, that pharmacists in general are satisfied with the direction in which the N.H.S. negotiations are proceeding, nor, may I say, is the Committee. All that I did imply is that the conference, in full possession of the facts of the case, were satisfied, in view of those facts, that at the present stage no other method of negotiation was likely to prove any better, if as good. The Coventry members also put words into my mouth which were never there, as your readers will appreciate if they refer to my letter. First of all, I am at a loss to know where I suggested that the multiples "would not co-operate in obtaining a new N.H.S. contract on our terms." I did not refer to the multiples in this context at all. The question of a new contract was however, fundamentally dealt with by Mr. Wright at the conference itself when he asked how one could compel the Minister to accept a new contract less favourable to the Government (for that is what it would be) short of strike action. Secondly, I particularly emphasised the value of the advice and guidance which the Contractors Committee could obtain through an Associates' Section, and therefore the suggestion in the Coventry letter that the Committee would not accept the advice of the professional man who was an employee has no foundation whatsoever, and is in direct contradiction to what I said. I have equally no intention of entering into contentious correspondence with Mr. Wilson; I would merely remind him that the system of delegate representation has been the accepted method in this country from Parliament downwards through all spheres of life for many hundreds of years. It is bound up in our whole democratic system.

H. MOSS, Chairman,
Central N.H.S. Committee,
London, W.C.1



The CHEMIST AND DRUGGIST

For Retailer, Wholesaler and Manufacturer

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Pharmacy's Wider Background

IN recent months pharmacists in contract with Executive Councils have been compelled to think hard about the comparative importance of the commercial and professional aspects of their day-to-day activities. It should not be overlooked that they have other horizons, for, in common with pharmacists in every other sector of the Pharmaceutical Society's membership, they share a variety of interests—scientific, technological and historical—which either prompted them to embark upon a career in the complex but fascinating field in which they now operate, or were engendered during the period of training and qualification.

In this Annual Special Issue of the *C. & D.* we aim to cater for that wider range of interests. Just as the key to the future may well lie in the past, so the key to a greater professional success and recognition in a calling practical in character and scientific in basis lies in widening one's horizons and adding to one's understanding. Upon those principles we base the varied fare now presented to the reader.

Speculations as to why a "pharmacist" in this country is called an "apothecary" in some others, even today, must have been aroused in the minds of those many pharmacists who take their holidays abroad or who meet their colleagues of other countries at professional conferences. Dr. T. D. Whittet begins in this issue a study of the historical influences that have operated to bring about such differences of title. His general introduction to the subject in this issue will be followed by a more detailed consideration of the circumstances in each country in turn.

A parallel speculation has prompted Dr. C. H. Spiers to inquire why a piece of pharmaceutical or medical apparatus in, say, glass has peculiarities of shape more characteristic of metal or wood or pottery, and the examples he illustrates, mainly from his own collection, lend point to the conclusions he has arrived at.

Miss Agnes Lothian, whose illustrated articles in the *C. & D.* over a number of years have greatly sharpened the interest taken by pharmacists (and, alas, by collectors) in the ornamental drug jars that were once articles of use—today of decoration—in pharmacies, deals this year with jars that are easily allocated to a definite date because the year features in the printed design they bear.

For any trend to be fully understood it must be traced back to its origins, and Mr. C. G. Drummond performs just such a service in the article he contributes on the first surgeon-apothecary in Scotland, a work of scholar-

ship that will be seen to be not without its grim humour.

Pharmacists' scientific curiosity is channelled by Dr. R. C. Nairn into a consideration of the uses to which the phenomenon of fluorescence has been put in tracing proteins in the tissues of living organisms, applications that will undoubtedly play their part in advancing the control of diseases at present intractable.

Dr. Robert Smith considers the effect of drugs upon pain, and throws light on the likelihood of important progress in this field by the employment of techniques of pain measurement — something that has hitherto proved beyond achievement.

On the technological side an account is given by Mr. Raphael Simons, a tablet maker of many years' experience, of the "know-how" of pan coating, a process that can hardly be said to have been taken over from the dispensing pharmacist by the manufacturer, since it never came into real use until the machine made it possible.

The future of the pharmaceutical industry especially is bound up in influences that will come to bear upon it if and when Britain enters the Common Market, and as a prime requisite in any situation is to know the extent of the problem, we have provided a tabulated summary of the manufacturers, country by country. It is hoped soon to offer a similar guide to the manufacturers of the European Free Trade Association.

Pharmacognosists and others will find material for thought in a survey of recent investigations into the properties and possibilities of various constituents of liquorice; and photographers in reading of the technical details of methods used by an eminent professional photographer on the staff of a manufacturing chemist in obtaining his results, the excellence of which speaks for itself in the reproductions.

MEDICAL ABSTRACTS

METHOHEXITONE AND THIOPENTONE

USING an initial dose ratio of 1:2·5, the anaesthetic merits of methohexitone* and thiopentone have been compared by Whitwam and Manners on 150 out-patients at a cystoscopy clinic at the General Infirmary, Leeds (*Brit. med. J.*, 1962, **I**, 1663). In six cases a supplementary nitrous oxide-oxygen-Halothane sequence proved necessary to maintain adequate control. Methohexitone was found to be about three times more potent than thiopentone, and there was a significant absence of hangover following its use. It was associated with a higher incidence of cough, hiccup and involuntary movement, but less lowering of systolic blood-pressure.

*Brietal (Eli Lilly & Co., Ltd.).

REDUCTION OF SERUM CHOLESTEROL

Two papers have been published (*Lancet*, 1962, **I**, 1321, 1323) showing the effectiveness of an orally administered combination of androsterone with ethyl chlorphenoxyisobutyrate (or CPIB), containing 22 mgm. of androsterone per gm.,* in reducing levels of serum liquid and uric acid. From the Royal Infirmary, Edinburgh, Oliver reports that the preparation caused significant and continuous depression of serum cholesterol, triglycerides and uric acid in nineteen out of twenty hypercholesterolaemic patients with ischaemic heart disease. The effective daily dose was 1·5-2·25 gm., given for up to seven months. No side-effects were observed. Thorp reports from the pharmaceuticals division of Imperial Chemical Industries, Ltd., experiments on monkeys that confirm the activity of the combined formulation and its freedom from effects on liver function. He has also investigated the absorption in man of CPIB, metabolism of the ester to CPIB acid and the distribution and excretion of that acid. The mechanism whereby androsterone is rendered orally active in the preparation is postulated to involve displacement of part of the plasma-protein-bound fraction of the steroid, and reduction of its rate of excretion.

*Atromid (Imperial Chemical Industries, Ltd.). At present on clinical trial.

NEW BOOKS

The Case Now Against Britain's Entry into the Common Market

F.B.M. Publication, 90 Bishopsgate, London, E.C.2.
8½ x 5½ in. Pp. 18. Sixpence.

THE writers of the booklet, which has been produced by the Forward Britain Movement, claim that the British "are in the midst of a great public relations campaign designed to brainwash them into believing that the Common Market is some sort of Eldorado which will solve all their problems." They argue that if tariffs cuts are required to stimulate British trade, then it would be better to seek them on a reciprocal basis or through G.A.T.T. as President Kennedy did recently for the United States. To disrupt trade with the Commonwealth countries, who take 46 per cent. of

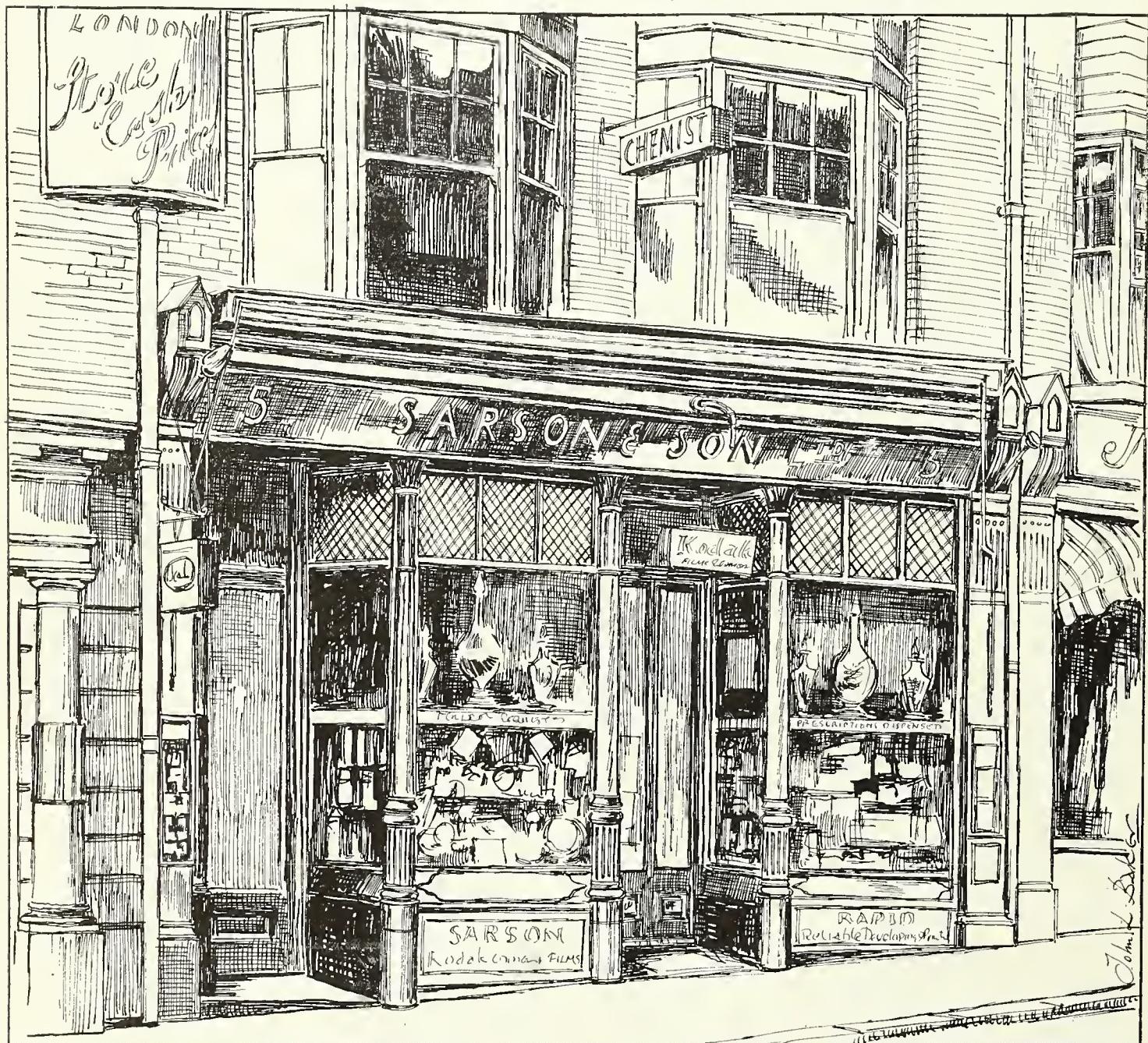
British goods, to join the Six who take only 14 per cent. "cannot be considered a contribution to solving our economic problems." Apart from the economic aspects, the pamphlet also discusses the political implications of joining the organisation.

Directory of the Federation of Nigeria, 1962

Diplomatic Press & Publishing Co., 13 Cotswold Gardens, London, N.W.2. 11 x 8½ in. Pp. 248. 40s.

THE new volume is the second edition of the directory since Nigeria attained her independence. It has been revised and enlarged, but follows the same general pattern as its predecessor and of other directories in the series. There are a trade index, a biographical "Who's Who" section, maps, tables, etc.

PHARMACIES OF BRITAIN



THE CENTRAL PHARMACY, PAIGNTON

In or around 1884 one of the earliest women to qualify in Britain as a chemist and druggist set up at 5 Palace Avenue, Paignton, with a woman colleague, a retail pharmaceutical business under the title Stamwitz & Neve. About 1887 the business was sold to Riches & Tomlin, Torquay. It was taken over in 1897 by Mr. Fred Sarson, whose son, Mr. J. R. Sarson, came into the business in 1925. A limited company (Sarson & Son, Ltd.) was formed in 1925. In 1947 a son of Mr. J. R. joined the company and is now its superintendent pharmacist.

The staff photographer of Beecham Research Laboratories, Ltd., tells how he produced the photographs that helped to present —to scientists, to medical men and to the general public— a story of new discoveries.

**FOCUS
ON
PENICILLINS**

IN June 1947 Sir Alexander Fleming passed through the main entrance of the Beecham research laboratories at Brockham Park, Surrey, to give them an official opening. Little did I imagine, as I heard Sir Alexander declare the laboratories open, that some years later I would be playing a small part in the investigation of the penicillins. Neither did I foresee that penicillin would again, as at the time of its discovery, hit the world headlines in Press and radio, nor that it would be highlighted on television as it has on several occasions during the past couple of years.

In 1929 Sir Alexander, in the course of his researches, discovered a substance produced by the mould *Penicillium notatum* (fig. 1), capable of killing a range of bacteria with which it came in contact. That substance, though he was unable to extract it, Sir Alexander named penicillin. As most pharmacists well recall, the extraction of penicillin did not take place until around ten years later, when, collaborators in the laboratories of Sir Howard Florey, among them Professor E. B. Chain, were able to obtain a crude preparation of the antibiotic. During the 1939-45 war great efforts led to the production of penicillin G, the most powerful antibacterial substance for controlling sepsis in wounds.

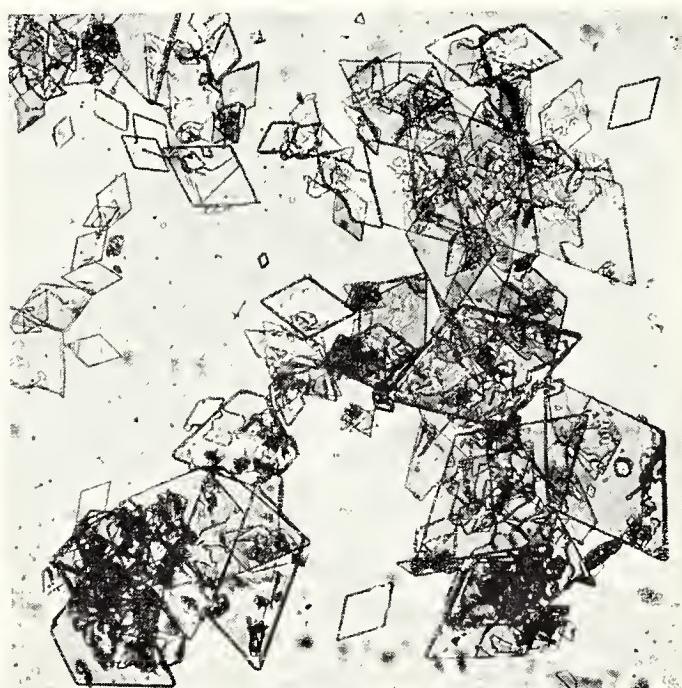
It is common knowledge today that penicillium moulds can produce a range of penicillins, all having the basic structure but differing in detail of the side-chains. The mould can often be induced, also, to produce a given penicillin by adding the necessary side-chain material to the broth culture in which it is growing. Even so, new penicillins produced from the penicillin mould in that way did not show any great advantage over penicillin G until years later, when in 1953 the useful properties of penicillin V were recognised.

The use of penicillin G revealed two defects: the first, that it was not regularly absorbed from the gut when taken



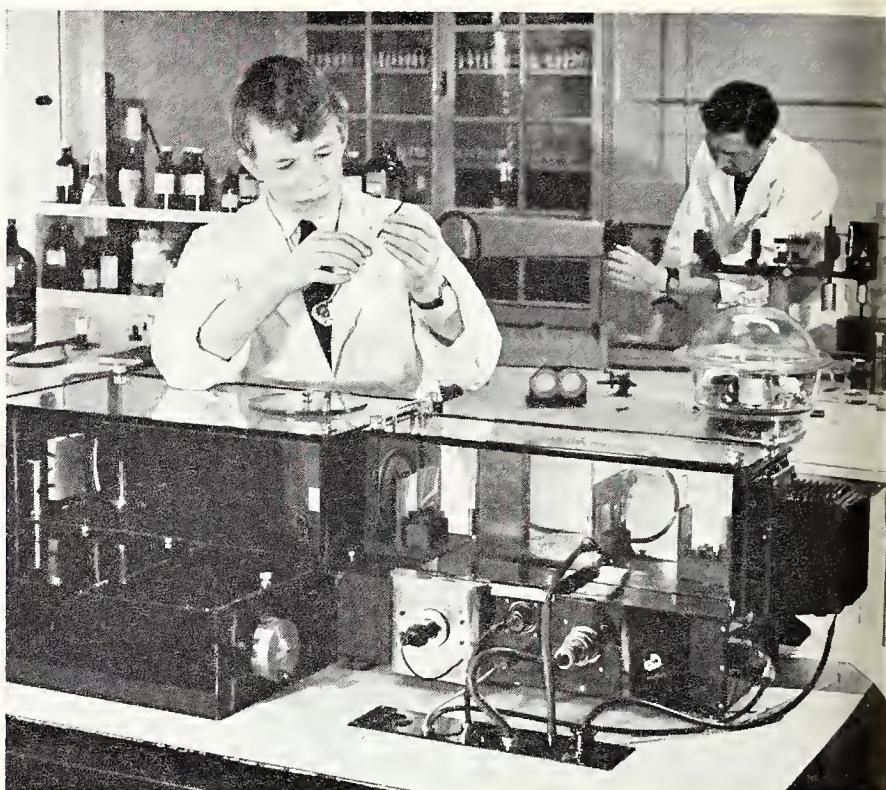
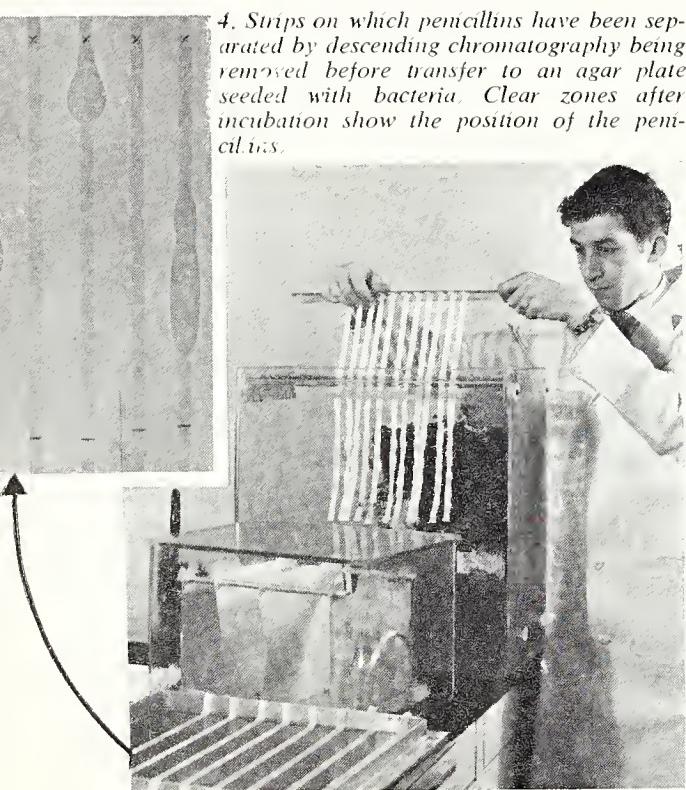
1. A fine laboratory culture of *Penicillium notatum* (x 4).

DOUGLAS F. LAWSON



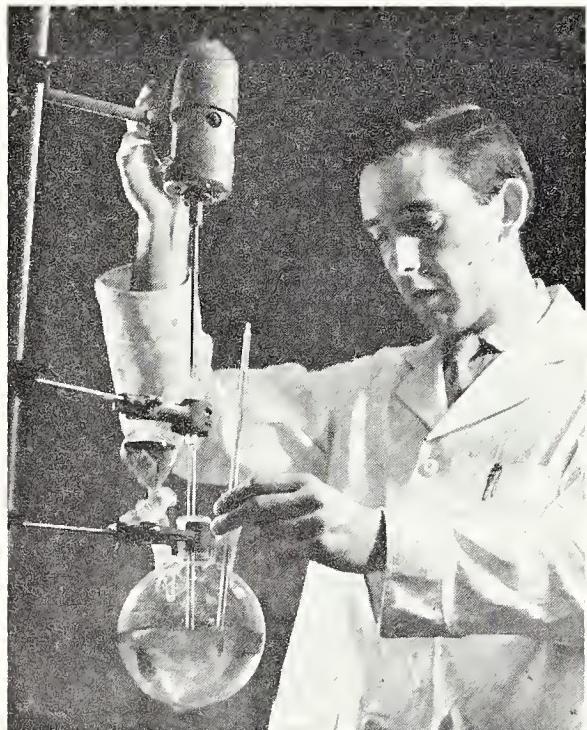
2. 6-Amino penicillanic acid crystals (x 160).

4. Strips on which penicillins have been separated by descending chromatography being removed before transfer to an agar plate seeded with bacteria. Clear zones after incubation show the position of the penicillins.

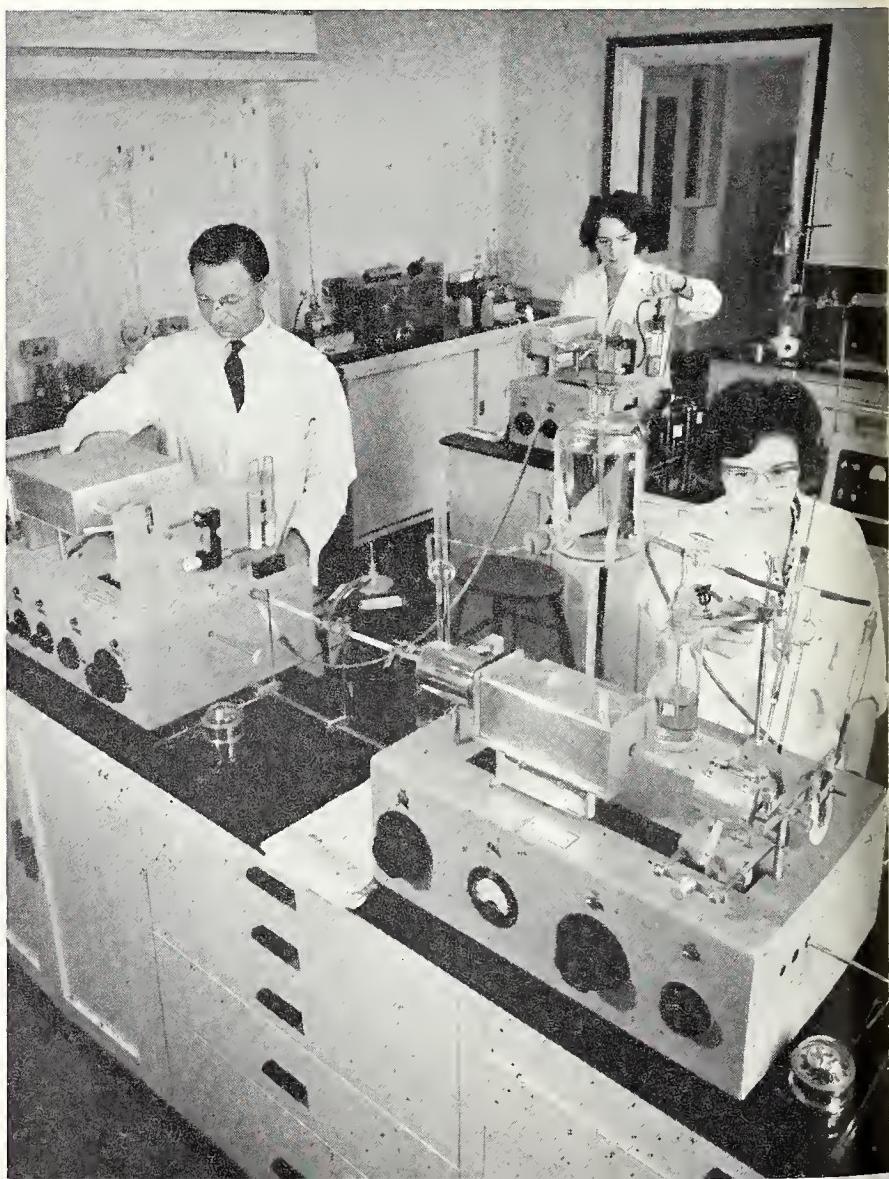


5. Comparing the infra-red spectra of various substances isolated from fermentation liquors. (HP3 plate. Two 500-watt Photofloods with daylight.)

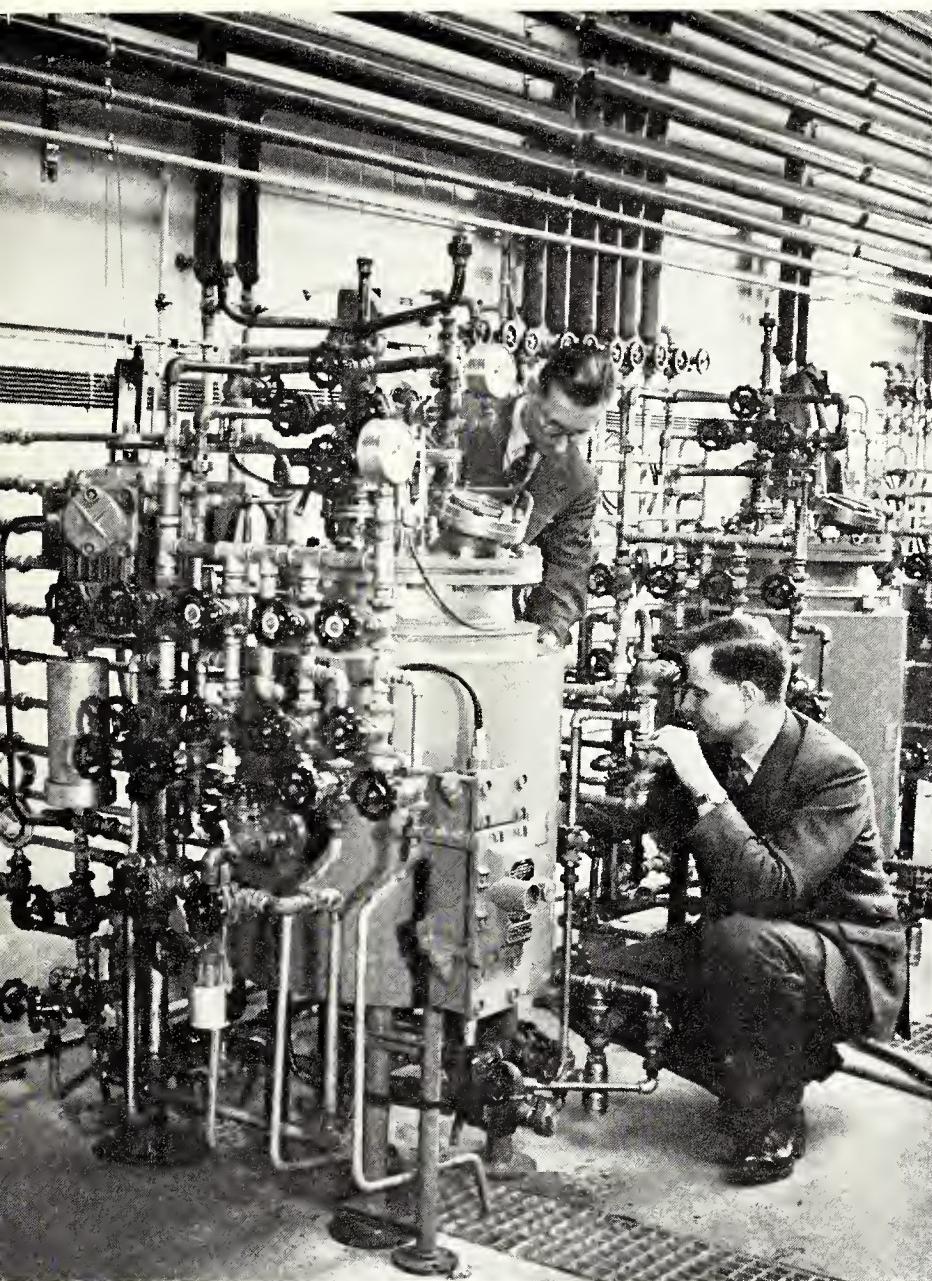
RESEARCH WORK ON PILOT-SCALE PRODUCTION



8. An organic chemist working at his bench (HP3 plate. Two 500-watt Photofloods. Low-angle viewpoint).



9. Part of the analytical department. One of the main problems was to maintain a true perspective of apparatus and personnel in a picture taken from ceiling level with a wide-angle lens. (Three 500-watt Photofloods.)



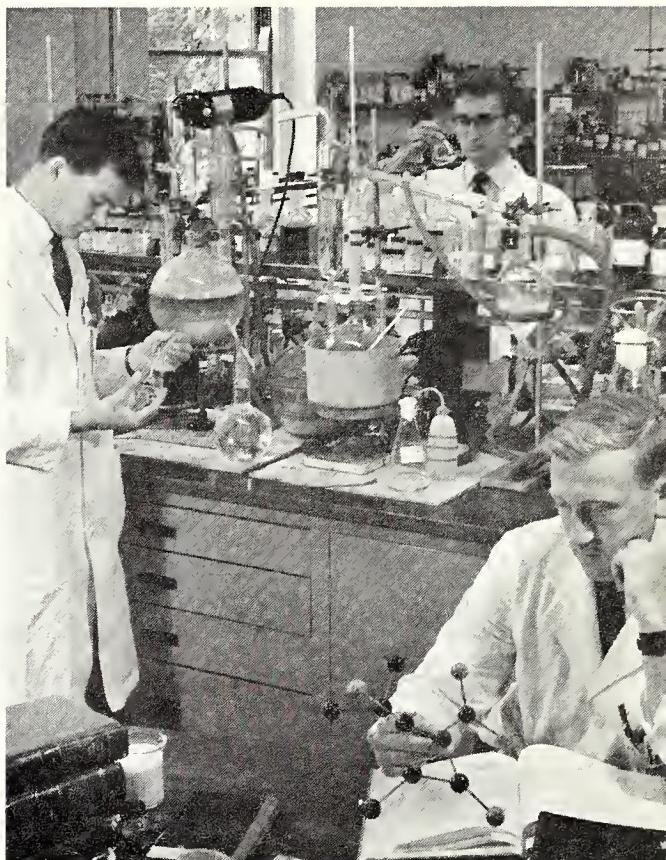
Microbiological pilot plant for extracting penicillin nucleus. (HP3 plate. Two 500-watt Photofloods.)

OF PENICILLINS

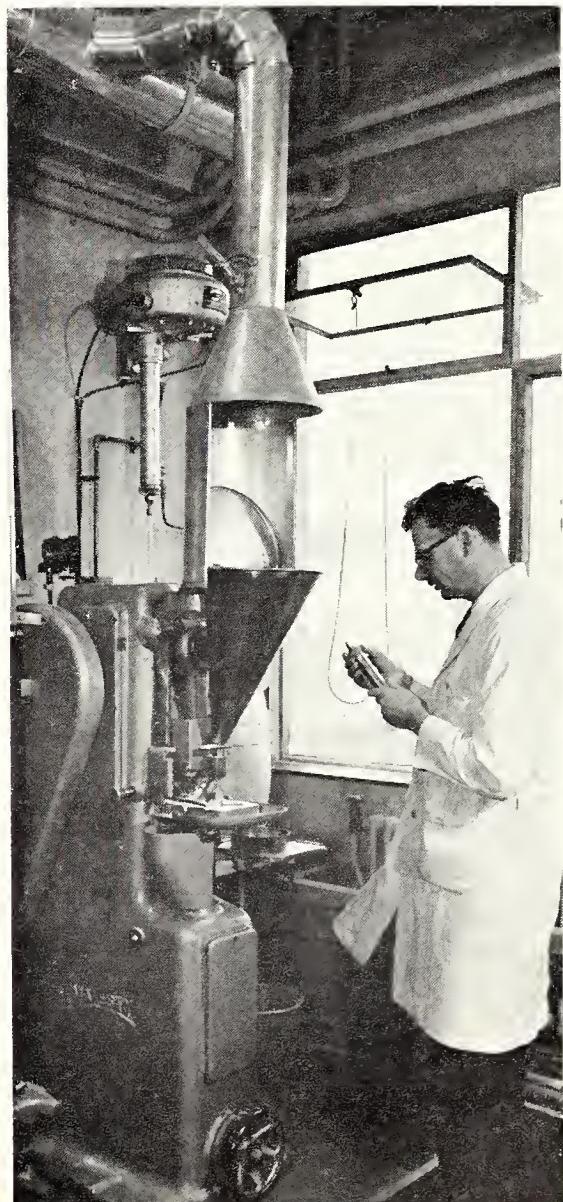
Evaluating the chemotherapeutic properties of new penicillins (HP3 plate. One 500-watt Photoflood with ceiling lighting).

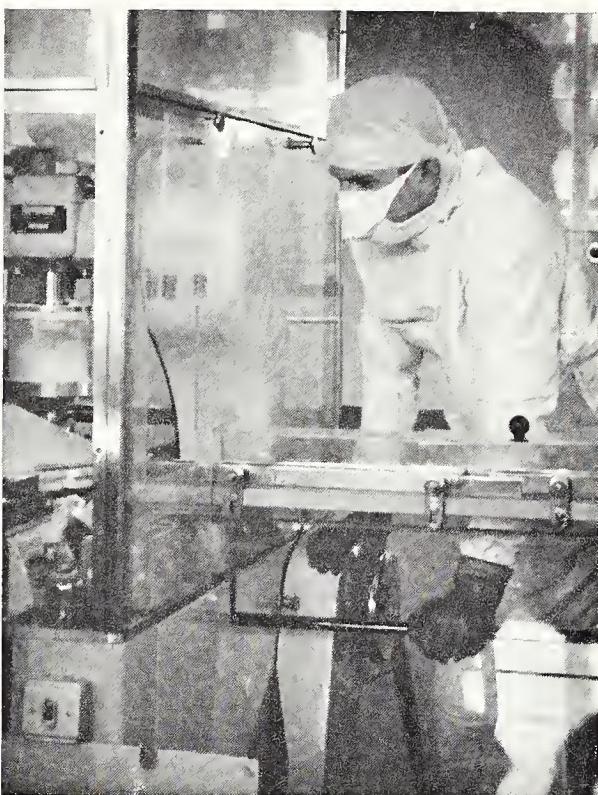


11. A measurement test in the tablet-making department. (One Photoflood high up and one directed at the base.)

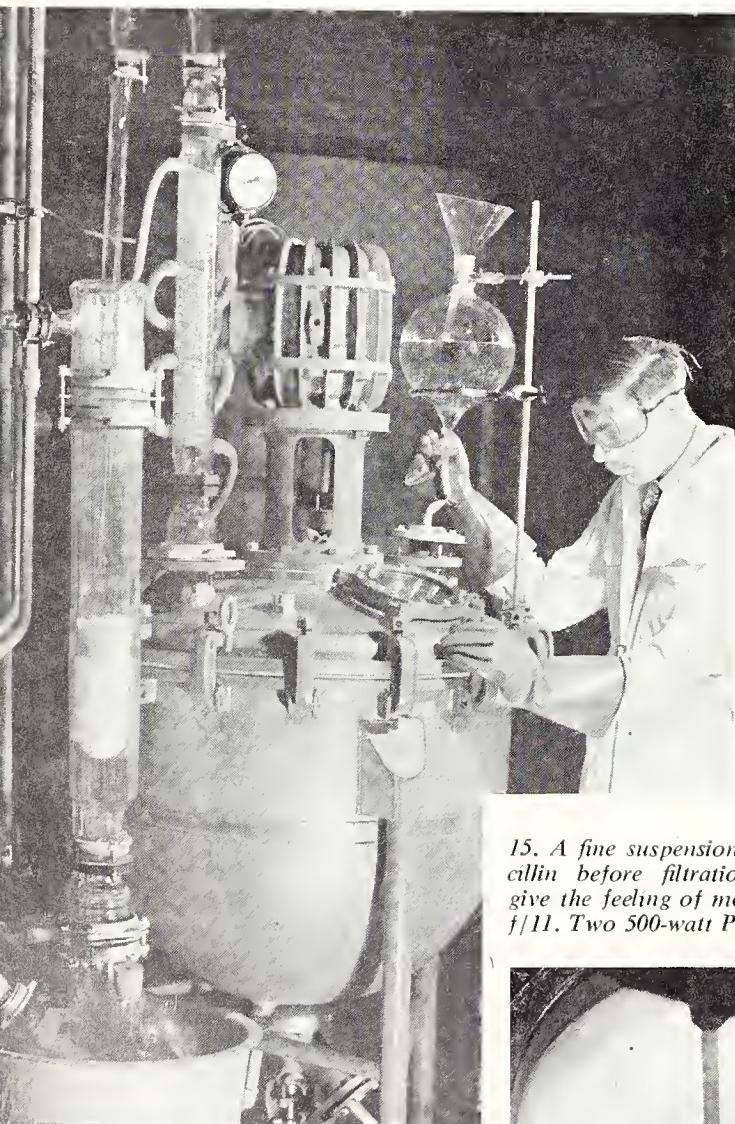


7. A section of the organic chemistry laboratory. To show the whole is impossible, but the part must give an adequate impression of the scope of the work done.





12. Photography of a sterile packaging department. The photographer must remain outside and photograph through plate glass. Oh, the reflections! (35 mm. camera. One 500-watt Photoflood plus existing lights.)

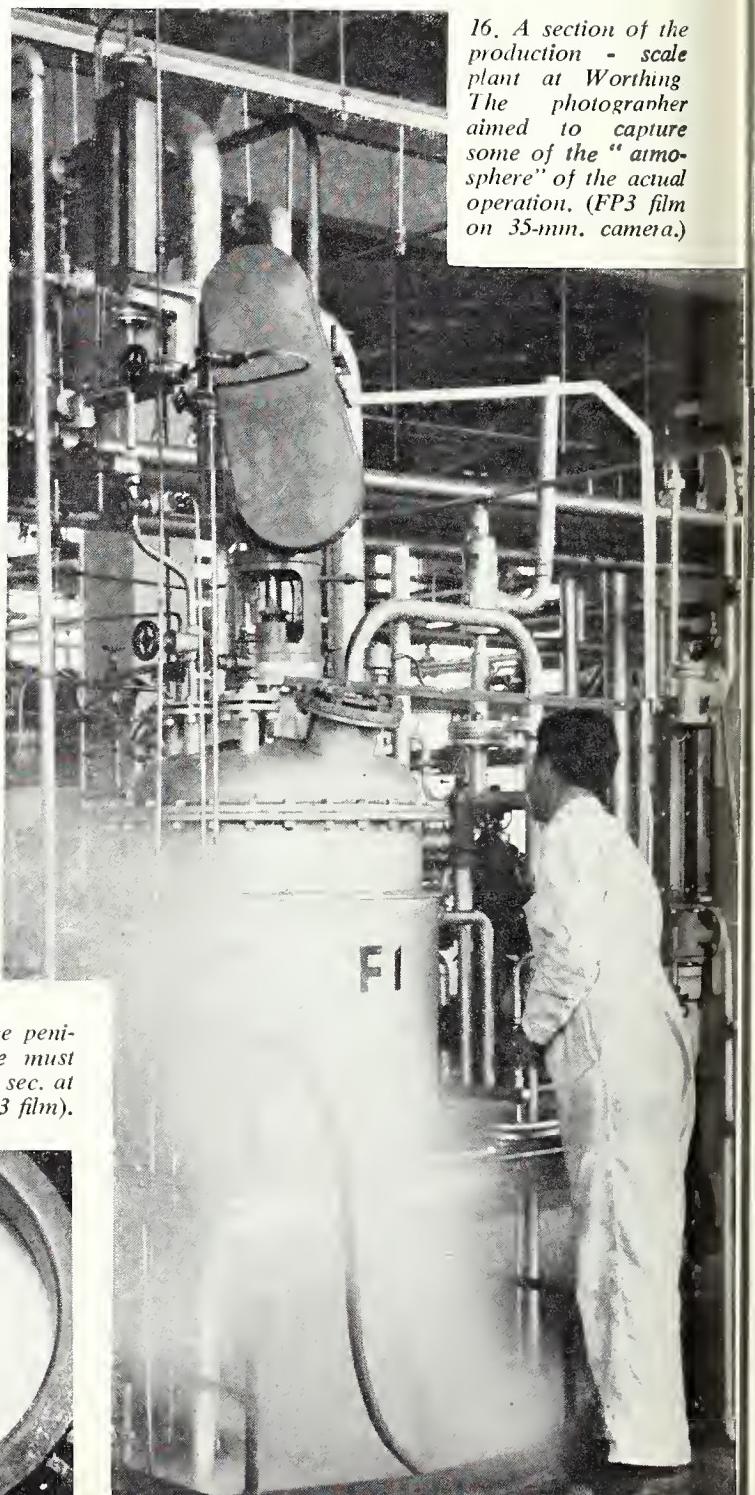


A reaction vessel for the experimental manufacture of the new penicillins from the isolated penicillin nucleus. (Ektachrome type B film. Two 500-watt Photofloods.)

MORE PICTURES OF WORK ON PENICILLINS



13. In photographing a clinical trial of the product the Photofloods must be carefully arranged to take care of both doctor and patient without interfering with the correct angle for the camera (HP3 film. Two 500-watt Photofloods).



16. A section of the production - scale plant at Worthing. The photographer aimed to capture some of the "atmosphere" of the actual operation. (FP3 film on 35-mm. camera.)



15. A fine suspension of a crystalline penicillin before filtration. The picture must give the feeling of movement (1/150 sec. at f/11. Two 500-watt Photofloods. HP3 film).

orally; and the second resulting from the fact that certain strains of staphylococcus can produce a substance, penicillinase, capable of destroying penicillins and so rendering them innocuous. The first factor restricted to injection the method whereby penicillin G could be administered, so that it would pass into the blood stream and ultimately to the affected areas. The discovery of penicillin V enabled the antibiotic to be taken by the mouth, but penicillin V also is destroyed by penicillinase.

Such was the position when Beecham Research Laboratories, Ltd., entered the antibiotic field in 1956 with microbiological investigations at Brockham Park. It was the intention of the company to produce penicillins that would serve as a starting point from which, by chemical manipulation, other penicillins could be made. The first to be chosen was *p*-amino benzyl penicillin. It proved the beginning of a long and important trail. At that stage in penicillin history two Brockham scientists went to Rome and worked with Professor Chain and his colleagues. Together they succeeded in obtaining quantities of material on which the chemists could carry out further research. After their return to Britain, work continued on a much larger scale and with added zest.

In that work the products of fermentation were assayed by two methods—a chemical one, and a microbiological method in which their effects on cultures of bacteria were noted. It was discovered that the two methods did not always give comparable results, and the endeavour to find out why that should be so proved the turning-point of the whole investigation. What was discovered was that, in the broth on which the work was being done, there was some material which resembled a penicillin but was without much antibacterial activity. The investigators found that, by simple chemical manipulation of the broth, they could prove that the material was in fact 6-amino penicillanic acid (fig. 2). That compound has the simple basic structure of the penicillins but has no other side chain than a hydrogen atom. That was the all-important and vital discovery.

With the penicillin core available it became possible to prepare any number of different "side-chain" derivatives (fig. 4). It was visualised that eventually penicillins could be "tailor-made" for use against specific diseases. Several such antibiotics are now at the doctor's disposal.

Celbenin (methicillin; chemically 6-(2,6-dimethoxybenzamido) penicillanic acid) was introduced in 1960 as an injectable derivative specifically resistant to attacks by penicillinase. Another new penicillin designed to broaden the scope of antibiotic therapy is Penbritin, introduced in 1961. As well as being orally effective, Penbritin (ampicillin; chemically 6-[D(-) α -aminophenylacetamido] penicillanic acid) kills strains of organisms not previously within the range of effect of penicillins.

With those discoveries the Beecham research organisation has justified the company's policy of financing pure research, and since 1947 the premises of the organisation have had to be expanded to cope with new scientific and medical demands.

Technique of Pictorial Presentation

Presenting the story of 6-amino penicillanic acid in pictures has been no easy matter. With the camera, as with the pen, before a story can be told all the details must be mastered. Nothing must be added or subtracted that would create a false picture. For example, a recent request from an outside source was for a photograph of a particular laboratory with, somewhere in the picture, a model of the mole-

cular structure of the 6-amino penicillanic acid and side chains. As such a structure was never used in the laboratory in question, its inclusion would have been tantamount to putting hockey sticks in a cricket picture.

It is, of course, not possible to tell here the whole photographic story of the Laboratories' work on penicillins, so I have selected pictures in three groups: scientific, record and illustrative. Even in the so-called "record" shot my belief is that photographers should try to be creative, the aim being a picture from which nothing can be added or taken away without destroying its purpose and significance. In scientific photography unity is achieved by selection of field (figs. 1 and 2); in record photography by careful placing of personnel in relation to apparatus (fig. 4) and its operation; in illustrative photography composition, arrangement and simplicity (figs. 5 and 8) sum up the requirements. Unless a picture is held together by a structural composition, it will not tell its story effectively. That applies as much to bricks as to persons. In my pictures I try to achieve cohesion between the objects of a mass—an object within a whole. There must be contrasts as well as tonal values, but the objects photographed should themselves exhibit such differences. Repeating an object, not necessarily in the same size, can also be a most effective device.

Composition is, in my view, a governing feature of a good photograph, and without it the picture has less appeal. Yet composition is a means to an end, which is expression. Subtract either composition or expression from an ideally contrived photograph and it loses its balance.

In presenting my picture story of the penicillanic acid derivatives, I have limited each subject to one theme (figs. 11 and 12). That, I feel, is more likely to command attention than if too much detail is crowded into the picture. Some of the illustrations selected for reproduction are best suited to enlargements, rather than reproduction in reduced

size on the printed page. Not that the details should be ignored. They should be included to support the theme employed (fig. 6) but should not compete with the main centre of interest. Nor should all pictures be limited to a single object or person. In some of my pictures a number of closely related objects and persons have been worked into what, I believe, is a complete unit.

If a number of laboratory scientists are viewed at work facing in various directions, they tend to appear fragmentary and attention fails to be attracted to any one particular point of interest in the picture. To correct such a fault, the photographer should include in his picture only a part of what was at first envisaged. Alternatively, he may throw the background out of focus and reduce the area of activity. As a photographer I like to use the whole of the negative area, so as to avoid the necessity of over-enlarging.

I find that pictures which, for instance, include glassware, apparatus, fixtures, bottles and personnel are difficult to take because of the compressed variety of detail. To solve the problem it is necessary to take the camera to a higher point (the ceiling if you wish) and to use a prominent foreground object (figs. 7 and 9). A feeling of depth can be brought about by including a figure, or a large piece of apparatus, close to the lens, but without destroying harmony and a natural perspective. The foreground interest, if sharp, gives clarity and substance to a picture that could otherwise be a floating mass of detail—or fuzz.

My aim has been to retain a "natural" perspective. It is easy to stray from a true or natural perspective when using a miniature camera, and extra care must, therefore, be taken.



3. Dr. John Farquharson, F.R.I.C. (director of research, Beecham Research Laboratories, Ltd.).

How unnatural it is to see a big head, an enormous flask or other objects in the foreground of a picture. (Unfortunately some photographers get away with it.) Sometimes unnatural-looking perspective is unjustifiably blamed upon the lens—an easy exit for the camera operator. A lens cannot give incorrect perspective; it merely records what is put in front of it.

A picture demands one's whole attention in all the departments of the art, not only after the trigger has been pressed, but also before.

I am only too aware that it is not always possible to take a photograph from the best viewpoint. Neither is it always possible to get as far back as one would like. Often I feel that a greater working area would be an advantage in some laboratories, especially when I find myself against a wall with a wide-angle lens in use (fig. 9). On those occasions the staff photographer has to "pull out all the stops." When it is necessary to take a shot from a "bird's eye view," perspective and leaning verticals have to be handled with extra care, and corrections, if possible, made whenever camera movements allow.

For lighting the subject I try at all times to use as little light as possible, even to the point of being mean (fig. 16). Because the light intensity relates to a point source and is measured along the axis of the lamp, the more the angle of incidence departs from the right angle the lower is the light intensity. The brightness of the light rays falling on the subject diminishes with the cosine of the angle: that has to be borne in mind when taking laboratory shots.

A modern laboratory is well lighted, meeting the demand for a bright and healthy place to work and furnishing the photographer with some of the light that is so necessary for his tasks (figs. 6, 7, 10 and 11). Sometimes it comes from diametrically the wrong direction, or bright sunlight may stream in through side windows or fanlights, driving the photographer to despair. Additional lighting must be used with skill. I find that several 500-watt Photofloods nearly always meet my needs. I like to use my floods to reinforce the available light, and almost always employ them to soften the shadows and thus reduce the contrast tones (fig. 13). The lamps must be operated by capable assistants, whose ability to handle them is invaluable to the man behind the camera. It also gives him time to consider other aspects of the picture.

Flash and "Floods"

Flash as a sole source of light makes photography easy, but does not necessarily make for a better picture. If flash is to be used, floods should also be employed in composing the picture, and in arranging the direction of the source. Flash bulbs are then fired from the same direction as the flood source: in that way shadows and bright areas are as seen if floods alone had been used. So often multi-flash bulbs are fired indiscriminately without thought having been given to modelling the objects within the picture. Adjustments cannot be made after the photograph has been taken.

As a photographer in many specialities I refuse to recognise that one pair of hands, plus a lens and emulsion, should be tied to a single line of photography. But whatever we endeavour to record through the various mechanical means at our disposal, one thing is common: we all paint with light, however varied that may be. The subject matter, the approach, often the strangeness, and the willpower that is applied to achieve the result are only parts of the expression of the camera medium. As a photographer I have to forget what I am and concentrate on what I see before me. The photographs will tell what success I have had.

THE author is grateful to the director of research, Beecham Research Laboratories, Ltd., for permission to publish this article and photographs; also to "sitters" for their co-operation at all times, and to his assistant, Miss Patricia Wilby.

TAKE YOUR CHOICE: "If you make a loss you are incompetent. If you make a good surplus you are a profiteer and exploiter."—Rt. Hon. Reginald Bevins (Postmaster General).

Before the Metal the Ore

A VISIT TO A WESTMORLAND BARYTES MINE

WAYS of burrowing downwards into Mother Earth are perhaps less thought about today than methods of reaching outwards to the Moon. Nevertheless mining, one of man's oldest occupations, continues to be also one of his most important. Recently the writer was privileged, by courtesy of the owners, Laporte Chemicals, Ltd., Luton, Beds, to visit the Silverband, Westmorland, barytes mine.

Barium and its Applications

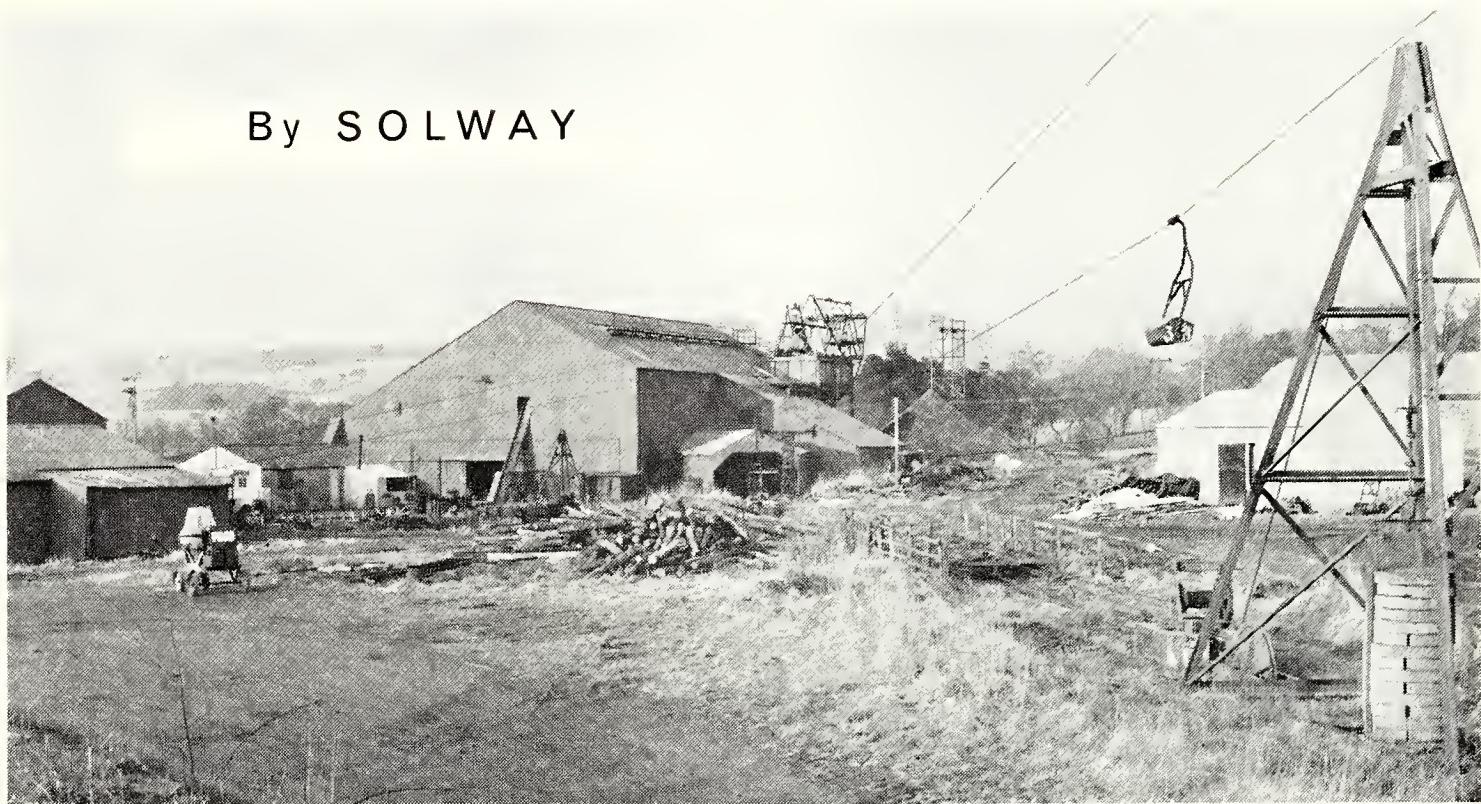
Barytes, or heavy spar, is a crude form of barium sulphate (Greek *baros*=heavy). Found in veins in association with galena (lead sulphide), calcite (calcium carbonate), fluorite (calcium fluoride), or quartz (silica), it was once a useless by-product of the lead-mining industry. Today, barium compounds find industrial applications in pigment manufacture, as mordants in textile dyeing, in the case-hardening of steel, and in glass and enamel manufacture. They give body to cloths, paper, rubber, linoleum and lithographic inks, and are used to produce blemish free bricks. Barium soaps are used as oil additives, other barium compounds as weighting applications in oil-well drilling. Barium salts often constitute important intermediates in inorganic chemical manufacture, serving to remove undesirable sulphate ions. After refining, barium compounds form the well-known barium meal in medical x-ray examinations. There are recent applications in the electronics industry and as an additive to concrete for irradiation shielding.

Its original interest in the production of hydrogen peroxide led the Laporte organisation to the manufacture of barium compounds. The link between the two has long been severed, since hydrogen peroxide outgrew the barium process by which it was originally made, but by that time the barium compounds had developed from the status of by-products into valuable substances with their own applications and markets.

At the outset barium peroxide imported from Germany was used in the production of Laporte hydrogen peroxide. When the raw material became unobtainable during the 1914-18 war, the company set up its own plant at Luton to produce barium peroxide from its parent mineral, barytes. Subsequently the company acquired its own barytes mines.

The Silverband mine is the highest-sited in Britain. Situated on the high Pennine fells, at a point close to the Westmorland/Cumberland border and at about 2,300 ft. above sea level, it lies beneath the 2,750 ft. high Great Dun Fell. Its situation, indeed, makes apt the dictionary description

By SOLWAY



Main office and washing plant at valley level, Knock.

of a fell as a lofty tract of barren moorland. On the summit is an Air Ministry radar station, with the mine about 450 ft. below, on the exposed breast of the fell. From the valley below it is scarcely distinguishable to the naked eye, even in clear weather, and impossible to pick out when conditions are adverse.

The view from the fells near the site of the mine is panoramic. The Pennine Wall rises steeply from the broad and fertile Eden valley, whose fields, hedges and copses appear as a pattern of shape and colour, especially at ploughing and harvest times. To the west the eye ranges over the Lakeland mountains, more than twenty miles away across the valley, rising clear and blue to the sky or receding with softened outlines like imperceptible shadows. To the northwest the Eden valley broadens out to the Cumberland plain, with the city of Carlisle as its hub. Beyond that again a glitter of sun may often be seen on the waters of the Solway estuary. Behind Solway may be glimpsed the mountains of the Scottish lowlands, with lonely Criffell (1,866 ft.) standing out clearly when visibility is good. Eastwards and north-eastwards lie the seemingly limitless fells and high moss, heather and bracken-covered moors of Northumberland. To the south-east, and rising from the south shoulder of Cross Fell runs the River Tees—the boundary between Yorkshire and Durham.

Challenging and benign on fine warm hazy days, or when sunlight and shadow chase each other in perpetual motion over the breasts of the fell, the countryside is threatening, forbidding, even repelling in days of cold rain or wind or when the fells are shrouded in mist or cloud. It is the country of the "helm" wind—that cold boisterous rip-roaring product of north-easterly air streams reacting to changing temperatures and pressures.

1,500 ft. below the Mine

On the morning of my visit the fells were wreathed in clouds that parted occasionally in promise of lifting later. The main mine office of the company (situated on a narrow winding road, bordered by dry-stone walls, that twists and turns along the fell bottom from Brampton in Cumberland to Appleby, the county town of Westmorland) lies at the foot of the fell, about 1,500 ft. below the mine. There I met the mine manager (Mr. Donald Brown), clad, as the work demands, in full-length overalls and rubber boots. From a

drawer he took a large plan—the original map tracing the mine workings as they were in the year 1846 under the London Lead Company. At that time the company was looking for lead, not barytes, for lead was sought over the whole of the vast fell area of the northern counties, and mining operations go back, it is thought, to Roman times. From 1750 onwards the London Lead Company leased many sites for excavating, though they did not find much at Silverband. The company was Quaker in origin, and treated the men justly and fairly, while expecting that they and their families would attend some place of worship on the sabbath. In return, the men were provided with cottages, reading rooms, chapels and schools. A medical service was provided free of charge, and workmen injured or ruined in health were assisted from a company fund. The work was arduous, and poverty and sickness were never far away. Richard Watson, the miner poet of Teesdale, who commenced work for the company at the age of ten, wrote:

*Here I may sweat and dig for lead
'Mid smoke and dust, to earn my bread,
And go half clothed and half fed,
'Till I can work no more.*

In the course of time many of the mines were worked out. It became more economical to import lead from the Continent, and in 1905 the company was wound up.

A Daily Trek

Until taken over by Laporte Chemicals, Ltd., in 1939 the Silverband mine remained closed. Since that date it has been worked continuously. Early each morning the miners are collected by coach from their homes in Penrith or villages in the Eden valley and brought to the office, whence they are taken up to the mine by truck. Time was when they reached their place of work by walking or by sitting astride one of the buckets of the aerial ropeway that transports the mineral from the mine down to the valley floor. It must then have taken them the best part of an hour to get up to the mine. I—more privileged—was driven in a Land Rover along the fellside road to the village of Knock, eastwards along a road that climbs steeply above the side of Knock Ore Gill, then sharply left again under masses of scree, doubtless brought down by glaciation in the Ice Age. With my companions I was now well up in the clouds, with visibility no greater than 20 yards.



After drilling, the ore is shovelled into trucks for removal to the mouth of the mine.

At the mine I met Mr. Cousin, the assistant manager. From him I took the strong leather belt, supporting an electric battery that I had to fasten round my waist before clipping to the front of my helmet the small lamp with which it was connected by flex. The mine entrance was only a few steps from the office, and we entered simply by walking into the tunnel entrance in the side of the fell. A gate now at the entrance had been put there, I was given to understand, to keep out unauthorised adventurous subterranean spirits such as pot-holers, lest they should come to grief. The light at the entrance of the tunnel was soon lost to us, and thereafter we relied solely upon our helmet lights. The tunnel is rough-hewn out of solid limestone, and I marvelled at the way Donald Brown, a shade taller than I, swung along in front with just the right amount of stoop, while I felt it necessary to walk almost doubled. After a time, however, I found I was able to walk more nearly erect, and finally was able to congratulate myself on having only twice banged my helmeted head on the hard wall above me.

Shafts and Crosscuts

The mine comprises a number of tunnels or roadways driven along the veins into the fell in different directions. At intervals roof and sides are braced with upright wooden posts and timber cross-pieces. Crosscuts connect workings at the same level; shafts are used to reach roadways at greater depth or to open up new ones. The walls of the roadway are of limestone, resting on a stratum of sandstone. Along a narrow-gauge railway on the floor of the tunnel a Diesel locomotive draws a train of steel wagons. "The road we are in," said my guide, "is the original one cut by the London Lead Company . . . This deep horizontal groove in the limestone was probably made by a miner working more than 100 years ago." Patches of iron ore, troublesome to drill, occur, and the manager drew my attention to them.

Water drains quietly, almost imperceptibly, into channels cut at the side of the track and is conducted outside the mine.

About a quarter-mile from the mine entrance, where the fell outside would be rising steeply nearly 400 ft. above us, we came to a shaft down which we went for about 45 ft. by means of three strong ladders with intervening platforms. From there we proceeded along a further series of workings under the roadway by which we had entered the mine. In sight were veins of barytes running transversely in the limestone and increasing in width as we walked on, deposited there millions of years ago from the layers of granite that lie deeply under these Pennine folds. Heat, pressure, and earth movements determined their formation, separating from the molten rock streams of elemental barium, lead, fluorine or other compounds and forcing them to a higher level. There they would crystallise, forming the veins of mineral deposits that are mined today.

At several points the seams showed a rich solid deposit of the sometimes translucent but more generally opaque barytes. It was easy to pull away numbers of the smaller crystals, which are tabular and rhomboidal in formation, though all imperfect. Larger crystals were tantalisingly fused to each other and rock-fast in the mass of practically pure mineral.

Journey to Luton

The miners work in small groups of two, three or four, by the method of compressed air drilling and blasting. The mixture of damp barytes and rock is shovelled into the trucks and, as the tunnel grows longer, so it is timbered. Where necessary, waste material is packed back into selected places. From the mine entrance the ore is transported by the buckets of an aerial ropeway to a processing plant at the foot of the fell, adjoining the main office. There the barytes is separated mechanically from foreign material by gravity washing, and conveyed, by means of a second overhead cableway, to a large hopper and thence to railway wagons at Long Marton Station on the Midland Region Glasgow-to-London (St. Pancras) line. Thereafter it is a matter of time before the mineral reaches the Kingsway sidings of Laporte Chemicals, Ltd., at Luton.

The writer thanks the company for their courtesy in permitting the visit, and Mr. Donald Brown and his assistant for converting it into a memorable reality.

CHIPPINGS AND DROPLETS

From the C. & D., April 15, 1871

BOTANICAL STUDENT'S DREAM

It was the middle of February, and I hoped to pass the Minor examination in May. I had devoted my winter evenings to botany, and was endeavouring to create out of Bentley and my own inner consciousness a correct idea of a plant. It was my off-duty night, and, after a good spell of reading, I found that my notions, instead of clearing up, became more and more confused and complicated. Suddenly it came into my head that I was a primordial utricle, and how to get out of my cell, notwithstanding its walls were but cellulose, was more than I could accomplish. But no, that was not it; a painful sensation across the chest made it evident that I was a cell myself, and that the hour-glass constrictive, preparatory to a division into two cells, was taking place. Though painful, this did not otherwise distress me, when I heard a rushing noise—(was it a cytoplasm?)—and, presto! the perfect image of my thoughts,—my ideal plant was full in view before me. Alas! what a Frankenstein had I brought to life, or to death in life! No old oak wild and gnarled, worn with the storms of five hundred winters, ever looked so weird and ghostly to the belated traveller as he passed it in the thickening twilight as did my unfortunate creation. Its arms were stretched out as if to seize upon its author, but the cell division being now completed, I slid easily out of the way. I saw what a frightful abortion I had produced. Was it an exogen with the wrong side out, or an endogen with the wrong side in?

GLASS METAL POTTERY WOOD

or what you will

PHARMACEUTICAL OBJECTS IN ONE MATERIAL COPIED IN OTHERS

ONCE an object has been made in one material, it is not long before it is made in others. That may be because of the whim of a particular craftsman—the case of James Watt's turned wooden hat is well known—but more usually it is because the alternative materials are more convenient, cheaper, or result in a better article.

a variety of materials, and one of the excitements of collecting is suddenly to come across an item in yet another unexpected material.

Mortars in Many Materials

Mortars are of prehistoric origin. In their earliest manifestation they were made of stones of various kinds. Later they came to be made, not only of stones, but also of metals, woods, porcelain, earthenware of various types, ivory and glass. Naturally there is some transference of shapes. It is most marked with ivory and wood, both of which are shaped by turning, and it is not surprising to find mortars of identical, or closely similar, shapes in those two materials (fig. 1).

Glass, shaped as it is by methods peculiar to it—blowing, drawing, moulding, pressing—tends to give rise to its own special forms. It is probably much easier to copy a glass shape in another material than to imitate in glass a shape easily possible in wood, metal or stone. A simple glass form is cylindrical, with a hemispherical base. An example is the seventeenth-century mortar of medium-dark green glass in the London Museum. That shape is



Fig. 1. MORTARS IN WOOD AND IVORY: i. Ivory mortar of the seventeenth or eighteenth century. 6½ in. ii. Wooden mortar of the same period. From Portugal. Height 7 in. iii. Ivory spice mortar inscribed "A. J. Barley, September 1880." Height 3½ in. iv. Lignum Vitae spice mortar. English, late eighteenth to early nineteenth century. Height 3¼ in.

Thus the same object may be found made not only of a variety of metals, of stones, of woods or of ceramic materials, but also in two or more different materials selected from metals, woods, stones, ivory or ceramics. Often the object is copied not only in principle, but in respect even of the details of shape and design. It is well known, for example, that potters such as Whielden copied closely the shapes and decoration of contemporary silver ware. Indeed, it is not always certain what the original material was, though that may sometimes be deduced on historical, stylistic or social grounds. One would imagine, for example, that the creamware Hugh Smith bubbly cup depicted in fig. 11 copied the silver form, rather than the other way round, since the somewhat tortuous handle would come more readily to the silversmith than to the potter. Sometimes the existence of an object in more than one material may be useful in dating it, especially when one of the materials is silver.

Objects made for the use of the pharmacist, the medical man, sickroom attendant and nurse are often to be found in



Fig. 2. MORTARS IN GLASS AND WOOD: Green glass mortar. English, seventeenth century. Excavated in Whitecross Street, London. Height 7 in. (Reproduced by permission of the Trustees of the London museum). Right, an English wooden mortar. Height 4¾ in.

DR. C. H.
SPIERS

shown in a wooden mortar (fig. 2). A more complicated shape in glass is exhibited by a seventeenth-century German mortar of colourless glass in the Squibb collection (Smithsonian Institute). That, with its mushroom handles and graduated steps at base and rim, resembles bronze mortars of the sixteenth century onwards. Here, obviously, the glass worker has copied the metal worker (fig. 3).

A type of mortar common in bronze and bell-metal has a flared mouth and expanded base. Characteristically French and Flemish, it is found both in wood and in earthenware, with a brown-and-cream tortoiseshell glaze resembling Whielden ware (fig. 4).

Albarellos

The albarello originated in the Near East, probably in Persia, as early as the thirteenth century. It was originally made in tin-glazed earthenware. The jar was tall, with a gently waisted body, standing on a foot formed by a rim and having a narrowed mouth, furnished with a rim convenient for tying on a cover of parchment. The shape seems to have been copied in glass, as is shown by the two right-hand specimens (fig. 5). A later shape has a bulbous top and bottom joined by a cylindrical zone—as, for example, in Venetian majolica vessels of 1570-80.



Fig. 3. GLASS AND BRONZE MORTARS: A colourless glass mortar and pestle, German, seventeenth century. Height 5 in. Smithsonian Institution, U.S. National Museum, Washington, D.C. Bronze mortar and pestle. Height 5½ in.

Waterford glass specimen at Dublin, whilst earthenware or porcelain baths may have moulded decorations.

Bleeding Bowls

Bleeding is an ancient practice, and during the Middle Ages doctors attached great importance to regular blood-letting. Men ate heartily, eating much meat, and drank large



Fig. 4 WOOD, BRONZE AND EARTHENWARE MORTARS: Upper row, Wooden mortar, English, seventeenth (?) century. Height 4½ in. Bronze mortar, English, dated 1661. Height 4½ in. Lower row, Earthenware mortar, Brown and cream mottled glaze, English, eighteenth century. Height 3½ in. Wooden mortar, Height 3½ in. Bronze mortar inscribed SPES MEA DEVS SIRE G DE FAILLI 1555. Height 3½ in.

Eye Baths

The date at which eye baths were invented is not certain, but they were known in the sixteenth century. The earliest specimens seem to have been of silver. In the eighteenth century they were made of porcelain and earthenware, and possibly also of glass. The shapes can be quite simple and, when they are, the porcelain and glass baths closely resemble each other (fig. 6). There is however, always a tendency for elaboration, and then developments are included that are rendered possible by the medium. Thus glass eye baths may have knopped or baluster stems or may be elaborately cut, as in the case of a



Fig. 5. ALBARELLO S: i. Venetian, 1570-80. Dark blue on light blue decoration. "Con f. Amech." Height 6½ in. ii. Glass. Italian, eighteenth century. Height 3½ in. iii. Venetian, 1570-80. Polychrome. Height 5½ in. iv. Glass. Italian, eighteenth century. Height 3½ in.

quantities of wine and ale. They took little exercise. As a result they became full-blooded and liable to apoplexy and other disorders unless blood was withdrawn from time to time. Monks were regularly bled five or six times a year.³ Bleeding was especially common in the sixteenth century, and it has continued, to a diminishing extent, into the present century. Somehow a certain type of vessel has rightly or wrongly come to be associated with catching the blood in blood-letting and has been called a "bleeding bowl." It is commonly a round, shallow vessel with a flat, projecting side handle or lug. It may be made of earthenware, delftware, pewter or silver. Thus the British Museum has a sixteenth century bowl made of a green-glazed buff earthenware and with a flat side handle. Referring to the bowl, which he calls a bleeding bowl,

far as is known, they bore at that time no distinguishing features to separate them from normal porringer. A record of 1673-74 refers to "ordinary blood porringers" weighing about 2 oz. each (1½ lb. per doz.); they would be about

3 in. in diameter and considerably smaller than the ordinary porringers, which might weigh as much as 7 lb. per doz. Michaelis says that mid-sixteenth-century pewter porringers had two ears, but that, from about the beginning of the seventeenth century, it became more common for porringers to be made with



Fig. 6. EYE BATHS: Porcelain, Caughley (1772-1814). Height 2½ in. Glass, English, c. 1780. Height 2½ in. Earthenware, Niderviller (second half of eighteenth century). Height 1½ in.



Fig. 7. BLEEDING BOWLS: Left, Lambeth "Blue Persian," c. 1680. Diameter 5¼ in. Centre, Pewter. Graduated in 2-oz. steps to 16 oz. Otherwise unmarked. Diameter 5¼ in. Right, George I (1717). Maximum diameter 4½ in.



Fig. 8. BEDPANS: Left, Green glazed, buff earthenware, English, sixteenth century. Excavated at Southwark. Maximum diameter 9 in. Right, English, c. 1790. Marked with crown and Tudor rose and "London." Maximum diameter 11½ in.

According to Michaelis,⁶ blood por-



Fig. 9. BED URINALS: Left, Glass. English eighteenth century. Right, Pewter, c. 1744. (Dr. T. G. H. Drake Collection, Toronto.)



Fig. 10. PAP BOATS: 1, Earthenware, with blue, transfer-printed underglaze decoration. Tower pattern. Marked "Spode" in blue, 1814-33. 2, Silver, London, 1824. 3, Glass, English, late eighteenth century (?). 4, Pewter.

one ear only. Larger pewter vessels with one side handle, dating from the eighteenth and nineteenth centuries, are certainly bleeding bowls, because inside them are engraved graduations rings at 2-oz. intervals. The one illustrated in fig. 7 is graduated up to 16 oz. Gaskell & Chambers, Ltd., illustrated and catalogued vessels of that type as bleeding bowls as late as 1900.

Similar single-handled, bowl-shaped vessels in silver have also been called bleeding bowls (fig. 7). There has been much discussion whether indeed they were ever intended to be used by surgeons or barber surgeons as bleeding bowls and whether such silver bowls could ever have formed part of the equipment of the seventeenth- and eighteenth-century surgeons.⁷ Some have thought that the smaller vessels were wine tasters and that the larger ones were porringers.

Undoubtedly special small porringers were used in connection with blood-letting—"bleeding porringers." Noon⁷ quotes a surgical work by John

Woodall, 1639, which refers to "blood porringers" holding just 3 oz. and also quotes C. J. S. Thompson's account of objects in the collection of the Royal College of Surgeons in which he refers to a will of 1606 mentioning "porringers for catching blood." Symonds⁷ drew attention to an illustration of a blood porringer and a definition in Randle Holmes's "Academy of Armory," 1688. The vessel was small and bowl-shaped, with a side handle and holding about 1 oz. Drake⁸ quotes Pierre Dionis,⁹ 1710, to the effect "In the days of Hippocrates bleeding was not so frequent as at present, and yet they drew more blood than we do now; for the ancients reckoned it by pounds and we by porringers, those of ours two or three porringers. These porringers have each a small ear to hold by on occasion, and they are to hold three ounces each."

Noon⁷ illustrated what he considered to be early silver bleeding bowls or porringers. One was the earliest known to exist, being hall-marked for 1625. It seems to have straight sides. Noon at first stated that it contained just over 3 oz., fitting in with Woodall's capacity, but later corrected that to 7 $\frac{3}{4}$ oz.

Thus, whilst there is evidence of the existence of special small "blood porringers" of up to 3-oz. capacity, there is no evidence that they were of silver, though there is evidence of pewter specimens.

As to the larger silver vessels of capacities of 8 oz. and upwards, there appear to be two shapes: (a) Before Charles II, with straight sides; and (b) from Charles II onwards, with "booged" bowls (i.e., with curved, or bulging, sides and a small collar to the brim) (fig. 7). How¹⁰ considered that the straight-sided "bleeding bowls" illustrated by Noon, and of dates before Charles II, were all covers of skillets which had themselves been lost, and that the later type of vessels with convex sides were made as separate entities for use as porringers. How also doubted whether they were bleeding bowls, because bowls sometimes bore contemporaneous coats of arms and he had not heard of any such being associated with the medical profession. On the other hand, since bleeding was common, wealthy households might possess their own bleeding bowls for use by visiting surgeons. The size might in itself not be against their use for bleeding, as much more than

3 oz. of blood might be drawn, but large pewter bleeding bowls are often graduated, and Oman¹¹ doubted whether silver vessels were made for bleeding, because he had never come across a graduated specimen. A surgeon who could not afford a silver bleeding porringer could still afford a delft one. If the delft vessels are bleeding bowls, it is hard to see why vessels of exactly the same shape in silver should



Fig. 11. HUGH SMITH BUBBY POT. Left, Silver, London, 1793 (Dr. T. G. H. Drake collection, Toronto). Right, Cream-ware.

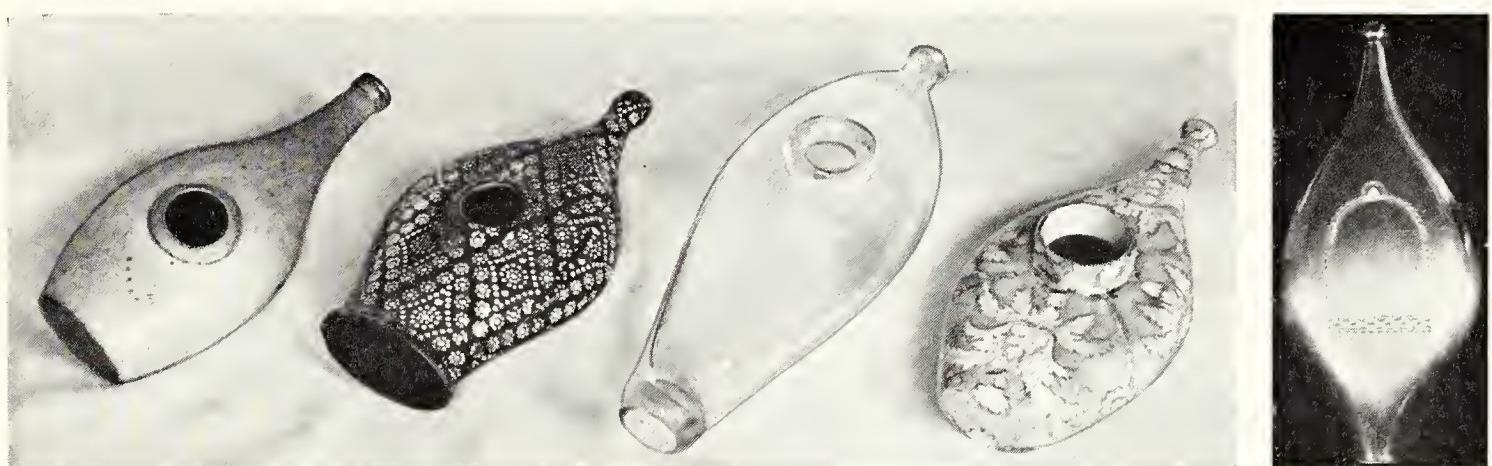


Fig. 12. INFANT FEEDING BOTTLES: 1, Salt-glazed stoneware. 2, Earthenware. Brown with cream slip decoration. 3, Glass. Second half of nineteenth century. 4, Earthenware with blue transfer-printed underglaze decoration. Fig. 13. INFANT FEEDING BOTTLE: Silver. (Dr. T. G. H. Drake collection, Toronto.)



Fig. 14. POSSET POT: Lambeth, c. 1650. Height (including lid) 5 in. Fig. 15. POSSET VESSELS OR FEEDING CUPS: Left, Silver. William Davie, Edinburgh, 1772. Height 3½ in. Right, Glass. Height 4½ in.



Fig. 16. INVALID FEEDING CUPS: Upper row, 1. Liverpool Delft, c. 1760. Height 3½ in. 2. Glass. Second half of nineteenth century. Height 3½ in. 3. Lowestoft porcelain, c. 1770. Height 3 in. Lower row, 1. Porcelain. 2. Glass. Second half of nineteenth or early twentieth century.

Bed Pans

The bed pan seems to be quite an old piece of sick-room equipment. The illustration (fig. 8) shows an Elizabethan pan

not be made for the same purpose, to be owned, if not by the surgeon himself, then by a wealthy family.

Another type of bleeding bowl, also called a barber's bowl, is like a deep dish with a wide border from which an oval piece is cut at the side, so that the dish may be fitted against the arm during bleeding or against the neck during lathering. Those bowls were made of tin-glazed ware, plain or decorated with barbers' emblems and bleeding lancets. They were also made in China of porcelain for the European market and of pewter and brass.

of earthenware with a green glaze, excavated in Southwark, besides a specimen of the more common pewter pan. The pewter pans have apparently sometimes been converted into rose bowls by removal of the handle.

Bed Urinals

Bed urinals must have been invented quite early. The Glass Sellers' bills at Woburn Abbey¹² under the date March 22, 1685-86 include "1 Bed Urenall." Closely similar shapes are shown by a glass urinal in the writer's possession and a



Fig. 17. INVALID FEEDING CUPS: Left, Earthenware, Blue, underglaze, transfer-printed decoration. Tower pattern. Marked "Copeland, late Spode." (1847-67). Height 2½ in. Right, Pewter. Height 3¼ in.

pewter specimen forming part of the Drake collection¹⁰ (fig. 9).

Pap Boats

Pap is a preparation formerly used for feeding babies. Basically it was made by cooking flour or bread with milk or water. It was used from the most ancient times, and it was popular in the eighteenth and early nineteenth centuries. Drake¹³ states that the widespread use of pap feeding was probably a large factor in bringing about the huge infant mortality of the eighteenth century. The pap was fed to the baby with a boat-shaped vessel—the pap boat—holding 2½-3 fl. oz. (fig. 10). Pap boats might be made of pewter, silver, Sheffield plate, porcelain, various types of earthenware, wood, ivory, horn and, more rarely, of glass. English silver pap boats date from at least 1719. Oman¹⁴ states that they were of small market value and were converted to cream jugs by the addition of feet and a handle. But today they have become far from inexpensive, and they are apparently popular as ash trays. Pewter pap boats are known from the eighteenth century. Some years back there appeared a large number of heavy cast-pewter pap boats purporting to come from the Foundling Hospital. They were marked F.H. and dated 1800. They are apparently modern castings from the old moulds. Drake¹⁵ illustrates a pap boat of Sheffield plate. He also shows¹³ an unusual pap boat of Crown Derby porcelain c. 1850. The rear half is decked over.

Earthenware pap-boats are comparatively common. They usually carry a blue transfer-printed underglaze decoration. The author has one with the mark "Spode" and another with the mark "Copeland, late Spode." Both have the well-known Tower decoration which first appeared early in the nineteenth century. The former would be 1814-33 and the latter 1847-67. Hutchings¹⁶ illustrates a specimen of plain cream ware, whilst the Victoria and Albert Museum has a Leeds-ware boat with two side handles, a spout, and opposite it an animal-headed handle.

It must be difficult to make a pap boat in glass, hence glass boats must be rare. The writer recently, however, acquired a specimen whose shape resembles that of the nineteenth-century Spode specimen. Its bottom is ground off and polished (fig. 10). Owen Evan-Thomas¹⁷ illustrates (plate 68) an English eighteenth-century specimen of carved box wood and Pinto¹⁸ another eighteenth-century wooden example.

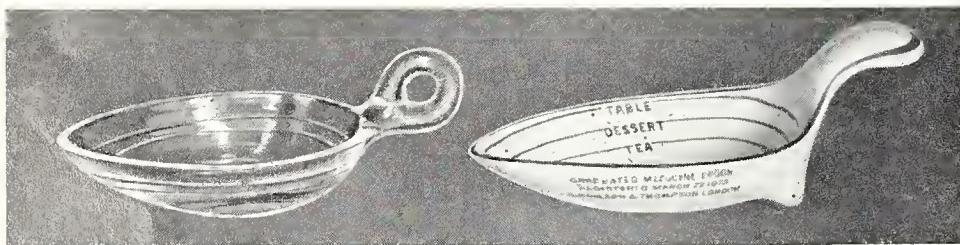


Fig. 20. GRADUATED MEDICINE SPOONS: Left, Glass. Alf. W. Panley, Druggist, 14th and Madison Streets, New York. Right, Earthenware. S. Maw, Son & Thompson, London. Registered March 22, 1873.

Infant Feeding Bottles

Infant feeding bottles date back to prehistoric times. The earliest specimens were made of pottery, but glass inevitably came to be used and the shape copied that of the existing pottery vessels.

From then onwards there have been a variety of improved shapes, many of which appear in several materials. The bubbly pot invented by Hugh Smith, jun. (1736(?)-89) was first described by him in the second edition of his book "Letters to Married Women," 1768. It appeared between that year and the first edition of that work. That first edi-

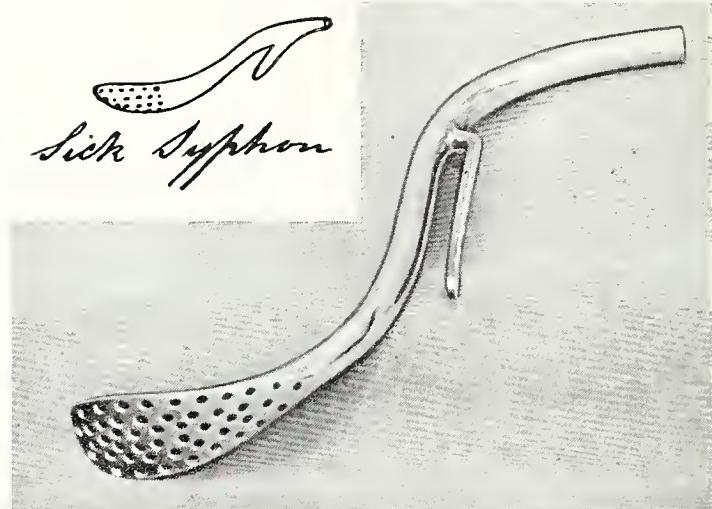


Fig. 18. SICK SYPHONS: (Main illustration), Silver, London, 1800. Inset, Wedgwood pattern book, 1803, No. 1246.

tion is, however, apparently scarce, for the British Museum catalogue and the Index Catalogue of the Library of the Surgeon General's Office, U.S. Army, both mention only the second edition. Based as it was upon the gravy pot of the period, the vessel was doubtless first made of silver by an obliging silversmith. The Drake collection has a specimen hall-marked for 1783 (fig. 11). Silver was, of course, too

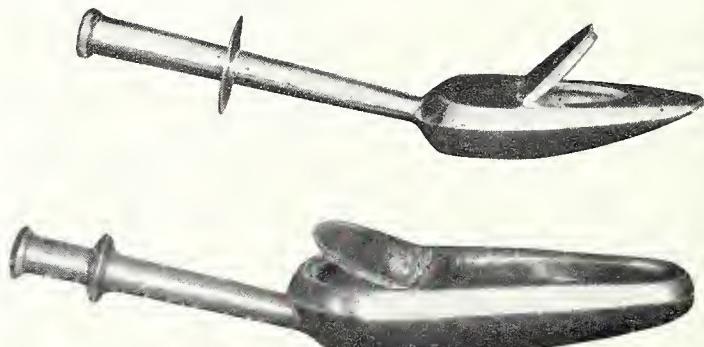


Fig. 19. GIBSON'S MEDICINE SPOONS: Top, Silver, London, 1831. Bottom, Pewter.

expensive for general use, and the sixth edition of Hugh Smith's book, 1792, states "The milk pots are now also made in the Queen's Ware, in order that the poor may be accommodated; any person, therefore, at a very trifling expense, may be convinced of their utility by making the experiment." Fig. 11 shows how closely the earthenware pot copied its silver predecessor, even to the handle, which is of a shape more awkward for the potter to make than for the silversmith. The name Queen's

ware was probably not adopted by Wedgwood for his cream coloured earthenware until 1765 or later. Wedgwood's pattern book for 1803 depicts a bubbly pot of similar form, but differing slightly in detail from the pot illustrated. Similar pots were also made by other factories, and the Victoria and Albert Museum has a specimen of somewhat yellower shade, attributed to Leeds and labelled "Watering Pot."

The more common flat, oval-shaped bottle, with a narrow nipple at one end and a large round hole on one side to be closed by a cork (fig. 12), was apparently first made of earthenware in the late eighteenth century (fig. 12). Hutchings¹⁶ depicts a specimen in transfer-printed decorated pottery with the incised Spode mark. Most specimens are decorated with a blue underglaze transfer-printed design, but plain ones are shown by Hutchings and by Drake. The writer has a salt-glazed stoneware specimen (fig. 12). The Drake collection contains a Scottish silver specimen, c. 1800: here the round side hole is replaced by a tightly fitting hinged lid (fig. 13).

According to Drake¹⁹ it was only in the latter part of the first half of the nineteenth century that glass became common for feeders. In England the flat oval shape of the pottery bottles (fig. 12) was duplicated in glass about 1840 onwards.

There is also the typically German, tall, conical shape, with a screw-on cap and bearing a nipple. The vessels were originally made of pewter and the conical body was flared outwards towards the bottom. They go back about 250 years. The shape was copied in glass in the nineteenth century, though the shape was modified to a simple cone.

Posset Pots and Glasses

Spouted posset pots and glasses were used for serving posset, a drink made of hot milk, curdled with ale, wine or other liquor, to which was added sugar, spice and sometimes other ingredients. It was regarded as a delicacy and also as a remedy for colds and other ailments. The larger vessels were most commonly bulbous in shape. They had two side handles and a curved spout, joined to the body of the pot along its lower part, for drawing off the liquid from the bottom of the pot. The vessel had a lid. Originally the pots were probably made in tin-glazed ware, and one of the earliest specimens is dated 1649. The shape was copied in glass, as is shown by a lead crystal syllabub cup of the seventeenth century in the Cecil Higgins museum at Bedford. Besides the large pots there were smaller posset pots and glasses of various shapes intended for individual service. An early type has a plain cylindrical body. They were made both in tin-glazed earthenware as well as in glass. The writer has a plain Lambeth pot of that shape, about 1650 (fig. 14). Similar-shaped, plain glass pots were made, according to Barrington-Haynes²⁰, in the 1660's by the Duke of Buckingham at his Greenwich glass house and by Ravenscroft (about 1677-78). A later type (late seventeenth/early eighteenth century) was thistle-shaped with a foot. That shape was copied in silver, as is shown by the 1772 specimen in the illustration (fig. 15). The smaller pots and glasses were doubtless used for invalids.

Invalid Feeding Cups

Spouted feeding cups are of ancient origin, not only for feeding babies, but also for feeding adults. The British Museum has a most elegant Sumerian gold spouted cup that belonged to Queen Shub-Ad (c. 2750 B.C.). The vessels were made in a great variety of shapes. One type had a cylindrical, or slightly tapered, body, a separated spout, curving away from the bottom, and a looped handle opposite. It is half decked over. Specimens are to be found in Liverpool or Bristol delft, in Lowestoft porcelain (c. 1770) and in glass, the latter being made during the second half of the nineteenth century (fig. 16).

Another type has a more or less hemispherical-shaped body with either a swan neck or a straight spout. It may

have one or two looped side handles or side lugs, and usually is half covered over, though occasionally uncovered. It is made in porcelain which may be beautifully decorated with hand-painted floral sprays and with gilding, or in earthenware. In the latter material the feeding cups are occasionally plain, but are usually decorated with blue under-glaze transfer printing. A "Copeland, late Spode" specimen (1847-67) bears the well-known Tower pattern found on pap boats and on a bordalou. A handsome feeding cup of that type, with two side handles and uncovered, is shown in a still-life by Pieter van Roestraeten (1630-1700). That type of feeding cup is readily translated into pewter, becoming rather more elegant in the process (fig. 17).

The not uncommon feeding cup with long curved spout and opposed loop handle, resembling a tea pot, was made both in porcelain and glass. Hutchings¹⁶ dates the glass specimens at c. 1860, and they are still shown in the 1903 price list of S. Maw, Son & Sons, Ltd. (fig. 16).

Sick Syphons

A curious device was the "sick syphon" (fig. 18), which could be inserted into a cup of some kind of food and hooked on to the side. The syphon enabled the liquid portion of the contents to be conveniently sucked up. It was made not only in silver but, as is apparent from the Wedgwood's 1803 pattern book, also in cream ware. The writer has come across a specially made case containing a sick syphon and a Gibson's medicine spoon.

Medicine Spoons

The well-known Gibson's medicine spoon was apparently invented and made as early as 1827, though it was first described in 1828 in volume 46 of the *Transactions of the Society Instituted in London for the Encouragement of Arts, Manufactures and Commerce* (the present Royal Society of Arts). Since Charles Gibson was a goldsmith, and there exists a silver specimen hall-marked for 1827 in the Wellcome museum, the first models must have been made of silver. The spoon was also made of pewter and Britannia metal. Possibly Gibson himself was first responsible for having pewter spoons made, for some exist marked "B. Gibson, Inventor." J. & S. Maw listed similar spoons, doubtless of pewter, in their 1832 catalogue. Britannia-metal spoons were made by James Dixon and Sons, Sheffield.²¹ The graduated earthenware medicine spoon, registered in 1873 by S. Maw, Son & Thompson, was paralleled in 1879 by similar spoons made in glass and offered for sale by Hagerty Brothers of New York. In 1898 Messrs. Whitall, Tatum & Co., New York, were offering for sale such graduated glass spoons with the druggist's name impressed upon them for advertising purposes.²² Fig. 20 shows an example impressed "Alf. W. Pauly, Druggist, 14th and Madison Sts."

Except where otherwise stated, all the items illustrated are from the author's collection. The writer is indebted to Mrs. Nina Drake for permission to reproduce items from the T.G.H. Drake collection.

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TWO CENTURIES OF DATED DRUG JARS

AGNES LOTHIAN

CASTEL Durante, a town near Urbino in Italy, was an important centre of maiolica manufacture in the middle and second half of the sixteenth century, and the potteries there working under the patronage of the Dukes of Urbino were responsible for many beautiful examples of pharmacy ware.

The technical process of making maiolica, the name by which this tin-glazed earthenware is known, is described by one Cipriano Piccolpasso (1524-79) of Castel Durante, in his manuscript *Li tre libri dell' Arte del Vasaio* (The three books of the Potter's Art) written between 1556 and 1559. The manuscript, now in the library of the Victoria and Albert Museum, London, has been made available to us in English by Bernard Rackham and A. Van de Put, who edited and translated it in 1934. The first book describes how the clay is obtained (usually from deposits in the beds of rivers) and prepared for the body of the wares, and the method of shaping them by throwing on a wheel. In the second book the author outlines the construction of the kilns and the procedures to be adopted when firing the wares, as well as instructions for the preparation of glazes and pigments. The processes of glazing and painting are dealt with in the third volume.

The decorative pharmacy jar illustrated in No. 3, from the collection of Mr. H. E. Brocksom, is attributed to Castel Durante. The jar, which is 7½ in. in height, is painted with

trophies and musical instruments in orange shades on a ground of blue and copper green. The date 1566 is inscribed on a group of *trofei* just under the neck rim. The inscription 3E3ER CoD signifies Zinziber conditum or preserved ginger.

Venetian Wares

No. 1 illustrates a characteristic type of late sixteenth-century Venetian drug jar with a leaf design in blue on a pale-grey blue ground. This type of foliage, with leaves painted in blue partly light and partly dark and peculiar to Venetian and Netherlandish maiolica, originated in Faenza. The jar is one of a set of seven spouted jars formerly in the collection of the late Sir William Pope, who was Professor of Chemistry at Cambridge. On the front, underneath the spout, there is a figure of a saint. The inscription is A.Q. D. ABROTA VO or southernwood water. The reverse side illustrated shows the double snake handle terminating round a gargoyle head, below which is the date 1578. The inscriptions of the other six jars in the set—all in Roman lettering—are:—

A Q . D . CELIDONIA	—celandine
A Q . D . CUSCUTA	—dodder
A Q . D . MAIORAM	—marjoram
O L . D . COBRICI	
S Y . D . AGRITIVO D . CET	
S Y . D . MENTHA	—syrup of mint

and O X Y M E L S I M P . , dated 1666, possibly a replacement. The albarellos belonging to the set also have the figure of a saint on the upper half of the drug jar. A view of the reverse of one of them, also dated 1578, is shown in No. 2. The name of the drug L O C . D . PINO (Lohoch of Pine) almost encircles the waist band. (This important collection of dated Venetian jars is now in the possession of Mr. H. E. Brocksom, London, N.W.3).

There is a drug pot of similar aspect, dated 1593, in the Victoria and Albert Museum, London. It has the name of the drug in Gothic characters.

No. 4, also from the Brocksom collection, is decorated on the handled side with blue foliage in the Venetian style, but on the other side there is an entirely different design of blue and yellow Urbino-like grotesques.* The jar has the inscription I V L E B . A C E T O S (julep of vinegar)

* A type of maiolica decoration introduced at Urbino in the latter half of the sixteenth century consisting of grotesque and fanciful monsters in the manner of the grotesque designs of Raphael in the Loggia of the Vatican.



1. Venetian jar showing back with mask under ornamental snake handle and date 1578 and front with Saint under spout and inscription A.Q. D. ABROTA VO. H. 9 in.



Show jar dated 1647 in blue, yellow and brown with the arms of the Apothecaries' Company. H. 16 in. Museum of the Pharmaceutical Society of Great Britain.



2



3



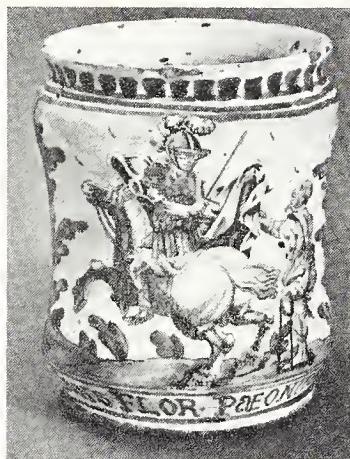
4a



4b

2. Venetian albarello from the same set at No. 1, and showing date 1578. H. 8½ in. 3. Castel durante jar dated 1566. H. 7¾ in.
4a. Front (in yellow) of jar for IULEB ACETOSO, showing spout. H. 8 in. 4b. Rear (in blue) of same jar, with title repeated, showing striped handle and initials and date: G.B.P. 1652.

(Courtesy: Mr. H. E. Brocksom, London, N.W.3)



5. Castelli jar, rear, showing device of Carthusian order and date 1702, and front, with design of St. Martin and the beggar and title CONS. FLOR. PAEONIE. H. 6½ in.

underneath the blue and yellow striped spout. The inscription is repeated in blue on the *a folie* side over a panel containing the initials G.B.P. and the date 1652.

Another jar of this type, where the decoration is divided vertically into two halves, may be seen in the Museum of Messrs. Hoffmann-La Roche in Basle. It is a large two-handled jar decorated on one side with blue foliage and on the other with orange-yellow Raphael-esque grotesques. The handles have a serpentine terminal similar to the Venetian wares.

Two finer examples of this style of decoration are the pair of oviform pharmacy vases with domed covers in the Ashmolean Museum, Oxford (not illustrated). They are decorated on one side with grotesques in yellow, greyish-blue and orange colours on a white enamel ground and on the other side with blue foliage on a similar ground. Each has a pair of double serpent handles half blue and half orange-yellow.

According to the inscriptions written on oval labels, the jars were made at Rome in 1600 by Diomede Durante. On



Sketch of two-handled jar in Hoffmann-La Roche museum, Basle.



6



7

6. Nove jar dated 1711. H. 6½ in.

(Courtesy: C. W. T. Ridout (School of Pharmacy, University of London))

7. English "bird and basket" jar dated 1702. H. 6½ in.

one the inscription is "FATTO IN BOTEGA DE DIO-MEDE DVANTE IN ROMA" and on the other "FATTO IN ROMA DA GIO PAVLO SAVINO, MDC."

The potters at Castelli, the leading centre of maiolica manufacture in Abruzzi, Italy, during the seventeenth and eighteenth centuries, were responsible for many drug bottles and jars. Biblical scenes such as the passion of St. Stephen* illustrated in "Saints on Drug Jars" (THE CHEMIST AND DRUGGIST, June 5, 1953, p. 599), allegorical and mythological subjects, pastoral scenes, painted in dark brown and dull olive green, were characteristic themes.

The "Saints" article also included an illustration of a Castelli drug bottle, with the date 1698, depicting St. Martin of Tours dividing his cloak with a beggar. The same scene appears on a small drug jar (No. 5) where St. Martin is shown on horseback in full armour dividing his cloak with a sword to give to a crippled beggar. On the reverse is the device of the Carthusians shown here are similar to those on the drug bottle—the only difference being the date. The position of the drug cartouche—at the foot of the jar—is typical of Castelli drug ware. *Cons. Flor. Paeonie* signifies Conserve of paeony flowers.

* By D. Francesco Antonio Saverio Grue (1685-1746), the son of Carl Antonio Grue.

The Nove resin ointment pot depicted in No. 6 is a typical example of a North Italian drug jar, the shape and blue on white decoration being characteristic of potteries in Venezia during the eighteenth century. The date 1711 may be the year in which the pharmacy "Alla Montagna" (the mountain) was founded. These jars, which are invariably unmarked, sometimes have the initials of the owner—in this instance "V.M."

The rhubarb extract drug jar was formerly in use in l'Ospedale Maggiore della Carità at Novara in N.W. Italy. On the upper part of the jar is a blue ribbon scroll bearing the name of the hospital in abbreviated Latin H O S P . M A I . C H A R . C I V . N O V . forming a panel in which is a picture of Our Lady of Charity.

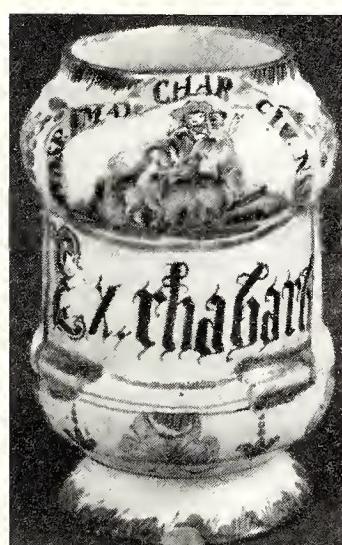
L'Ospedale Maggiore della Carità was founded at Novara in 1642—a year of pestilence. Illustrations of the old pharmacy show the fine ceiling, on which is a painting of the Madonna with children. The maiolica artists have reproduced it on the drug ware. The jars, which are decorated in a dull green, blue and orange-yellow, belong to the second half of the eighteenth century. The rest of the surface is covered with a floral decoration, the lettering being carried out in manganese. Other examples from this interesting set are in the Museum of the History of Science in the old Ashmolean building at Oxford (see THE CHEMIST AND DRUGGIST, June 26, 1954, p. 667) and in the Museum of Messrs. Hoffmann-La Roche at Basle, Switzerland.

London Delft

The "Lambeth" English delft drug jar illustrated in No. 7 formerly contained the famous electuary Theriac of Andromachus. The "bird and basket" design jar is dated on the front 1702. Although it was a frequent practice in the seventeenth century to put dates on "Lambeth" drug jars, eighteenth-century dated specimens are less frequently encountered. Other examples recorded on English "bird and basket" jars are 1714, 1724 and 1763. Theriac of Andromachus, or Venice treacle, contained seventy-three ingredients, one of which was the flesh of vipers. Venice treacle was publicly made, potted and sealed in London by the Worshipful Society of Apothecaries as late as the eighteenth century.

The magnificent show jar illustrated in the colour plate is the earliest known dated example of its kind. It is almost 16 in. in height and is decorated with the full arms of the Apothecaries' Company in dark blue, yellow and brown. The company's motto *Opiferaque per orbem dicor* is in blue. The rest of the decoration, painted in dark blue over a white background, consists of an all-over leaf design with a pomegranate bursting into seed and a bell-shaped flower amongst the foliage. Strongly drawn gadroons ornament the top and base. The design resembles that of the charger, dated 1640, in the Taylor collection (F. H. Garner's *English Delftware*, Pl. 5). The grant of arms of the Apothecaries' Company is dated December 12, 1617. Camden's description of the arms is as follows:—

"In a Shield Azure. Apollo, the inuentor of phisique proper, with his heade Radian, holding in his left hand, abowe & in his Right hand an Arrow: dor, Suplanting a Serpent, Argent. aboue the Shield an Helme, thereupon a mantle gules doubled Argent, and for their Creast vpon a Wreath of their Colours,



8. Eighteenth-century Italian jar from l'Ospedale Maggiore della Carità di Novara with design of Madonna and children. H. 7 in.

A Rynoceros, proper, Supported by two Unicorns, or, armed and unguled argent, upon a Compartment to make the Atchievement compleat, this motto, *OPIFERAQUE PER ORBEM DICOR*:

The motto was taken by Camden from Ovid's story of Apollo and Daphne, where Apollo, speaking to the nymph, tells her who he is,

"Inventum medicina meum est, opiferaque per orbem dicor,
et herbarum subiecta potentia nobis."

(The art of medicine is my discovery. I am called Help-
Bringer throughout the world, and all the potency of herbs is
given unto me.)

These lines were rendered by Dryden as:

"The art of med'cine is mine, what Herbs and Simples
grow in Field and Forrests, all their Pow'r's I know; and am
the great Physician call'd, below."

The roundel in the title-piece is from a maiolica plate in the Victoria and Albert Museum, London. It depicts a maiolica painter at work in the presence of a patron and his lady. The plate, diam. 9 in. and painted in blue, yellow, orange, copper, green, dark red and a purplish black, was made at Caffagiolo, Italy, circa 1510.

The colour photograph is reproduced by courtesy of the Council of the Pharmaceutical Society of Great Britain.

100 YEARS AGO

PHARMACY AT INTERNATIONAL EXHIBITION

From the C. & D., June 14, 1862

CONTINUING our tour of examination, the first article of importance we notice is Dunn's ingenious marking-ink pencil, placed immediately above Messrs. Pincoff's case, which has already been fully described in the pages of THE CHEMIST AND DRUGGIST. Still keeping to the cases surrounding the walls of the building, the next object that invites a notice is the very handsome case of Messrs. Savory & Moore. This firm, which does everything well, has fully carried out this principle in the exhibition of the many articles of interest displayed by them. We have no meritorious show of cut glass and gilding, but only what is in perfect good taste, business-like, clean and bright. The samples of cod-liver oil, both plain and medicated, are the first things that, side by side with oil from Norway and Newfoundland, merit our attention. Messrs. Savory & Moore exhibit a very light-coloured specimen of this valuable remedy, prepared by themselves from the freshest cod livers at a low temperature, by which means they avoid the disagreeable taste and odour thought to be inseparable from this preparation. They also send specimens of the oil combined with quinine and iodine, which look so bright and clear that one almost longs to be consumptive. A specimen of Dugong oil (which, by the way, appears to be more like fat than oil), much used as a substitute for cod-liver oil in Australia, will be looked on with great interest. The compound syrup of phosphate of iron, a preparation containing phosphates of iron, lime, and soda, and known in America as "chemical food," is also shown. Some fine specimens of santonin, the active principle of worm seed, pepsine wine. *Datura tatula* cigarettes, much used in asthmatic cases, and some granulated effervescent citrates, make up the rest of this very interesting and valuable case. We have, however, omitted to mention some fluid extracts of opium, sarsaparilla, taraxacum, sumbul, and buel, in which advantage has been taken of the antiseptic properties of glycerine. Many patients object to the use of extracts containing alcohol, from their peculiar taste and stimulating effect. The introduction of an agent which has all the antiseptic properties of the spirit without its bad effects, is an extremely useful and valuable innovation. A specimen of anarcotine will complete the list. This alkaloid, which, although obtained from opium, has no narcotic properties, has recently been much used in India as a substitute for quinine. It has been tested in this country, and has been found an efficient febrifuge.

Next to Messrs. Savory & Moore come Messrs. Hopkin and Williams, a house famous alike for its pharmaceutical and scientific chemicals. Here we again meet with some excellent scale preparations.

FLUORESCENCE PHOTOMICROGRAPHS

Autofluorescence is green because a yellow barrier filter has been used



FIGURE 1.—Influenza A virus in syncytial clump of calf testis cells stained with RB 200 anti-influenza globulin. Specific fluorescence in cytoplasm but no staining of nuclei. Faint greenish fluorescence, left of infected clump, is an uninfected cell. ($\times 800$)

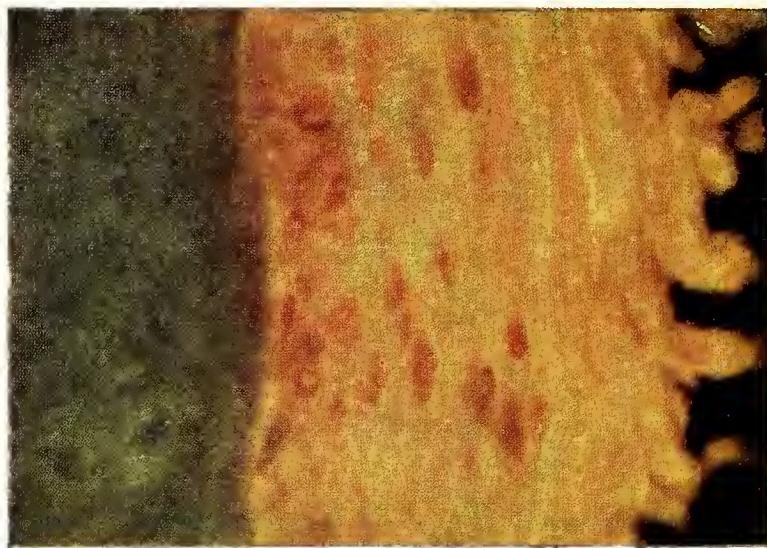


FIGURE 2.—Organ-specific antigen in human epidermis to the right, with absence from underlying cancer to the left. Section of skin treated with anti-human-skin serum. Specific fluorescence is conspicuous in cell membranes. ($\times 550$)

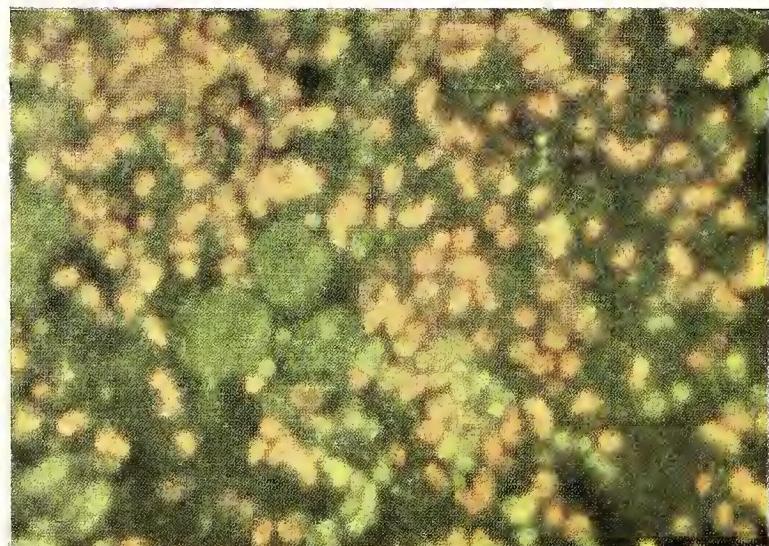


FIGURE 3.—Combined klebsiella and pneumococcal infection in mouse. Peritoneal smear treated successively with RB 200 anti-klebsiella globulin and fluorescein anti-pneumococcal globulin. Klebsiella stained orange and pneumococci green. Three greenish mesothelial cells left of centre. ($\times 800$)



FIGURE 4.—Renin in pig kidney. Section treated with anti-renin serum and then RB 200 goat anti-rabbit globulin (sandwich method). Specific fluorescence in cells of the glomerular tuft and capsule; auto-fluorescence in the tabules. ($\times 180$)

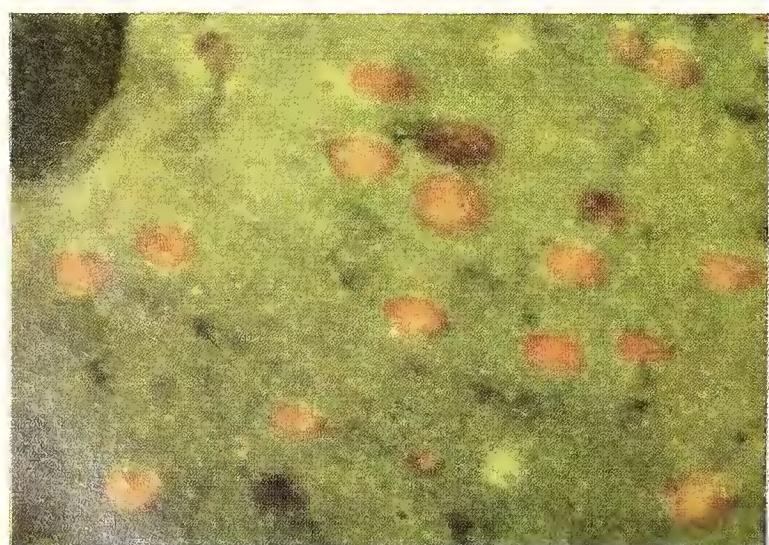


FIGURE 5.—Demonstration of anti-nuclear antibodies in serum from a man with disseminated lupus erythematosus, an "auto-immune" disease. Section of rat liver treated with the patient's serum conjugated with RB 200. Specific nuclear fluorescence against greenish auto-fluorescent background; quadrantal space, top left, is a centrilobular vein. ($\times 550$)



FIGURE 6.—Section of normal lung from a rat which had been injected intravenously with normal rat serum conjugated with RB 200. The orange fluorescent plasma contrasts well with the green auto-fluorescence of the lung tissue and the black non-fluorescent alveolar spaces; the small black bodies in the fluorescent plasma are red cells, which do not fluoresce. ($\times 550$)

Biological and Medical Uses of Proteins labelled with Fluorochromes

R. C. NAIRN, M.D., Ph.D.

(Department of Pathology, University of Aberdeen)

HERE can be no doubt about the value to biology and medicine of a method that permits the tracing of native or foreign proteins in the tissues of living organisms.⁹ Some proteins can be labelled and traced directly, others by the application of immunological principles in which they are located histologically by means of labelled specific antibody. Such labels are provided by certain fluorescent dyes which may be combined chemically with proteins, including serum antibodies, without material effect on the biological or immunological properties of the proteins. Fluorescent dyes are employed because they can be seen at much lower concentrations than ordinary dyes: fluorescein² and lissamine rhodamine B (RB 200)¹ are the fluorochromes in commonest use at present, giving respectively conjugates with apple-green and orange fluorescence in ultraviolet light. In suitable preparations of tissues, cells, and micro-organisms, these conjugates can be made visible by ultraviolet fluorescence microscopy, with considerable histological precision.

Technique

For conjugation fluorescein is used as the isothiocyanate¹⁴ and RB 200 as the sulphonyl chloride, and combination with serum protein probably takes place largely through the ϵ -amino group of the lysine moieties. Fluorescein thus forms a thiocarbamide linkage and RB 200 a sulphonamido linkage.

An excess of dye is used in the conjugation and some of this is adsorbed by the serum proteins. Free dye in solution and this adsorbed dye may be removed by passage through Sephadex or by shaking with powdered activated charcoal.⁵ The purpose of these procedures is to obtain a fluorescent solution in which all the dye is firmly bound to the serum proteins. For most applications, antiserum conjugates need further absorptions with tissue powders or homogenates to remove unwanted antibodies or other proteins which may be a source of non-specific staining reactions. The conjugates are applied to the antigen, such as a tissue section, as a drop, and the preparation is kept in a damp container for 10-60 minutes to allow the reaction to take place. The surplus conjugate is then removed by washing in buffered saline, pH 7.1. A glycerol mountant, which is non-fluorescent, is used and the preparation is then ready for examination by fluorescence microscopy.

The microscopy demands a powerful source of ultraviolet-blue light to stimulate adequate fluorescence in the preparation. A high pressure mercury vapour lamp is usually used and is fitted with optical filters which absorb heat and unwanted visible light. A barrier filter above the specimen prevents the primary illumination from reaching the eye of the microscopist, who sees only the fluorescent emission of the specimen against a black background.

Direct Tracing

This term is applied to the study of the distribution of fluorescent conjugates of proteins after direct injection into animals. The conjugates can be demonstrated in the animal tissues by fluorescence microscopy of histological preparations, or sometimes *in vivo* as in microcirculatory studies of mesenteric loops. Several physiological and path-

ological investigations by this method have been reported [Reviewed⁹]. Figure 6 shows the kind of histological picture obtained in the lung of a rat injected one hour previously with an RB 200 conjugate.

Immunological Tracing

This is an immuno-histochemical technique quite distinct from direct tracing and much more widely used. It depends on the fact that the serum antibody after labelling still retains much of its immunological activity, usually about 50 per cent. Such antibody can be used as a specific immunological stain for micro-organisms, proteins, and other macromolecules, which can therefore be identified even in the presence of closely related organisms or substances. The principles of the method are illustrated by an experiment in which an antigen, such as a suspension of micro-organisms, is injected into a rabbit to stimulate antibody production. The antibody, formed after two or three injections over a few weeks, is present in the γ -globulin fraction of the serum which is conjugated with the fluorochrome. The conjugate and the corresponding antigen react with immunological specificity; the organisms, coated with fluorescent antibody, fluoresce brilliantly when examined by fluorescence microscopy.

The method is applicable to any antigenic material provided it can be retained without denaturation in a microscopical preparation. The antigens that have been successfully studied include almost every kind of micro-organism and a wide variety of tissue components such as hormones, enzymes, tissue- and organ-specific constituents, and plasma proteins including antibodies.

Specific staining of the antigen is obtained by simple application of conjugate to the microscopical preparation which must sometimes be treated with some gentle fixative to retain soluble antigens. An alternative way of applying the antibody technique is by the double layer or "sandwich" method. The antigen is first coated with unlabelled specific antibody globulin which in turn is located with a labelled antiglobulin serum. This method has the advantage of greater sensitivity than the single-layer method and it reduces the number of conjugated sera required for work with several different antigens.

The value of immunological fluorescent tracing to microbiologists and immunologists has been unquestioned since A. H. Coons and his colleagues published their important series of studies on the distribution of foreign antigens, on the natural history of virus infections, and on antibody formation^{3, 4}. The simplest example of immunological tracing is perhaps the specific staining of bacteria by a conjugated antibacterial serum. The term specific staining here denotes the process of coating antigen with fluorescent antibody and of proving by suitable tests that the reaction is specific. Control tests commonly used are: (1) that fluorescent staining occurs only when the corresponding antigen is present; (2) that no staining of the antigen occurs when conjugated normal serum is used; (3) that staining is inhibited if the antigen is pretreated with unconjugated specific antiserum; (4) that staining is inhibited if the conjugated antiserum is first absorbed (*neutralised in vitro*) with the corresponding antigen.

In medical research, there are already numerous examples of the method having been used to identify a specific organism in a mixed flora—for example, Group A streptococci in throat washings.⁵ The method has also been used in veterinary research for the rapid identification of bacterial flora in the rumen contents of sheep and calves.⁶ Similar methods may be applied to botanical research: specific soil organisms have been demonstrated in and around plants, and their spatial distribution defined, despite the presence of large numbers of contaminating organisms.¹²

A refinement of this kind of immunological tracing is illustrated in figure 3, in which two different organisms are demonstrated simultaneously by double staining. The photomicrograph is of a smear of peritoneal exudate from a mouse infected with both a pneumococcus and a klebsiella. The smear, after acetone-fixation, was treated with anti-klebsiella globulin conjugated with RB 200 and then with fluorescein-conjugated anti-pneumococcal globulin; the two bacterial antigens are clearly visible in contrasting colours.

Diverse Applications

The remaining photomicrographs illustrate some other applications of the fluorescent antibody technique. The use of RB 200-conjugates in each of these reflects the author's special interest in this tracer. Figure 1 demonstrates the value of the method for the localisation of virus. It shows specific fluorescence due to the presence of influenza virus particles in the cytoplasm of an infected tissue-culture cell. The preparation is a coverslip monolayer fixed in acetone and stained with anti-influenza A globulin labelled with RB 200. Such preparations offer a method of studying the natural history of virus infection—its location and development. The cytological localisation can be sufficiently precise to permit a clear distinction to be made between antigen accumulation on the cell membrane, in the cytoplasm, in perinuclear membrane, and in the nucleus. Many viruses have been successfully investigated in this way⁷ and much information has been gathered on infectivity, growth cycles, and spread. Without the fluorescent antibody method, such information would have been obtained only with difficulty or not at all.

Figure 4 is an example of the use of the technique for the location of an antigenic substance native to the tissues studied—in this case the pressor enzyme, renin, in pig kidney.¹⁰ For this study, renin, prepared in as pure a state as practicable by chemical fractionation of pig-kidney extract, was injected with adjuvant into rabbits to provoke the formation of anti-renin serum. This was absorbed with pig-tissue preparations to remove unwanted anti-pig and anti-kidney components and to leave the anti-renin. The absorbed serum was then applied to frozen sections of pig kidney after fixation in 95 per cent. ethanol; the site of its reaction with the renin was located by subsequent application of anti-rabbit globulin conjugated with RB 200. Specific fluorescence was obtained in the cells of the glomerular tufts, but not if the anti-renin serum had been previously neutralised by mixing with the measured amount of renin. The findings do not demonstrate conclusively that the material located is renin, because the renin solution used for the neutralisation test was contaminated by related proteins; pure renin is not yet available. Many other native antigens have been identified and localised by the technique and these studies have been reviewed elsewhere.⁹

Figure 2 illustrates an interesting new development of the technique. It is a frozen section of a malignant tumour (naevocarcinoma) in human skin and shows specific staining of the normal epidermis by an anti-human-skin serum fully absorbed to remove other anti-human-tissue antibodies and leave only anti-skin activity. Here the serum has failed to stain the underlying cancer cells; by contrast, benign tumours of skin stained as strongly as the adjacent normal epidermis. Such findings support the view that malignant tumours lack specific material present in the normal tissues from which the tumours have arisen. An important concept

here is that normal tissues contain antigenic components that are specific for the tissues and the components are commonly in surface membranes of tissue cells.¹¹ This observation may have a bearing on some fundamental biological phenomena, for example, the natural mutual adhesiveness of related cells and the normal organisation of cells in tissue. Such a surface self-marker might be required for recognition and control of normal cells by the body; its absence in cancer cells could be responsible for their uncontrolled malignant growth.

The demonstration of serum antibodies in man and animals is another important use of fluorescent tracing: the serum to be tested is conjugated and applied to suitable preparations of antigens against which antibodies are suspected to be present in the serum. The method permits the diagnosis of recent illnesses due to bacterial or virus infection: the suspected antigen, obtained by culture, is stained specifically by the patient's serum, which may itself be conjugated or, alternatively, located by the "sandwich" method using conjugated anti-human globulin. This kind of application is rarely required in practice since simpler diagnostic tests are already available, but there are circumstances in which the fluorescence technique may provide information difficult to obtain in any other way. Figure 5 is an example in which human serum antibody to mammalian nuclear proteins is demonstrated by the production of specific nuclear staining in a normal tissue section. Anti-nuclear antibodies have aroused considerable interest because of their association with a group of human diseases of obscure aetiology, now often referred to as auto-immune diseases. It is believed by some, though by no means proven, that antibodies developed by certain people against their own tissues are responsible, at least in part, for clinical manifestations of disease; there is increasing evidence of this in a type of thyroid disease.¹³

Future of Fluorescent Tracing

Direct fluorescent protein tracing will no doubt be increasingly used since it can provide histologically precise information which is complementary to the more quantitative information obtainable by radioactive tracing.

Fluorescent antibody tracing is expanding rapidly from microbiological research and applied medical use, into fundamental studies of auto-immunity and of the immunological aspects of species and organ specificity, embryology, genetics, and carcinogenesis. Its widespread use in veterinary and botanical research may be confidently expected. The method is perhaps the most elegant and specific of all the histochemical techniques; its only limitations are those of immunology itself.

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The pharmacology of PAIN

*Some recent observations
on an old problem*

ROBERT SMITH, M.A., M.D.
Medical Research Department,
The Wellcome Foundation, Ltd.

THE word pain is derived from the Latin "poena," meaning punishment, and in classical allusions it implies retribution from the gods. In more modern times the immense accumulated literature on the subject fails to throw much clearer light on the nature of pain, which has to do with aspects of biology as imponderable as life itself.

Wolff and Wolf (1948), adopting a physiological approach, describe pain as a "specific sensory experience mediated through nerve structures which are separate from those that mediate other sensations." Other workers point out the importance of the psychological aspect of pain. Leriche (1938), viewing it through the eyes of a clinician dealing with patients suffering pain, takes the view "pain is not a simple physiological phenomenon involving specialised receptors, pathways and nerve centres. It involves the individual as a whole." Sir Thomas Lewis (1942), after a lifetime devoted to the study of pain, appears overwhelmed by the attempt to define pain, writing "Reflection tells me that I am so far from being able to define pain of which I write that the attempt could serve no useful purpose."

Physical and Psychological Aspects

Pain involves both physical and psychological aspects of man's being, the one interacting with the other. The pain of trauma or bodily disease originates as a physicochemical process in the damaged cells of the area involved. Local disturbance in homeostasis provides the stimulus which activates the nerve elements present and initiates the nerve impulse, which traverses the sensory peripheral nerve fibre and enters the central nervous system. There the impulse ascends by elaborate pathways to the higher centres in the brain and finally reaches consciousness.

It is there that the final mystery is enacted. The physico-chemical activity within the nerve tissues produces a sensation. Matter is converted into an abstract phenomenon. Chemical processes, enzyme activity, movement of electrolytes—all features associated with the passage of a nerve impulse—induce a sensory experience when the level of consciousness is reached. The matter/abstract barrier is penetrated with miraculous ease. Little wonder that Lewis, the greatest experimental biologist of his time, was reduced to helplessness!

Nor does the mystery end here. Pain may arise within the mind itself without an incoming stimulus from the periphery. Psychogenic pain is pain arising within consciousness itself and usually indicates some psychological disturbance. Psychic factors not only can produce psychogenic pain, but they may constitute the initiating stimulus of bodily disease. Mental stress can often produce skin disease and frequently is the basis of painful peptic ulceration.

Although the problems in this field are immense and

Pain has always been a familiar feature of life, and man has always been perplexed by it.

Pain is the commonest recurring symptom of disease, and yet it remains obscure and difficult to define

diverse, increasing knowledge and the development of newer techniques of investigation have made it possible to study certain aspects of pain in greater detail. Attempts have been made to study those effects, associated with tissue damage, that trigger off the stream of events which finally produce pain. This is an important area of pharmacological investigation. Nullifying the pain process peripherally is an attractive and desirable therapeutic step and is preferable to counteracting pain at a later stage within the nervous system itself. Attempts to overcome the pain at that stage can be complicated by widespread depression of the nerve centres.

MacWilliam and Webster (1923) made an early contribution to the study of peripheral mechanisms of pain production. They applied a tourniquet around the arm of a volunteer who then exercised his forearm muscles by opening and clenching the fist. As soon as the tourniquet was released and the circulation restored to the forearm the pain disappeared. Those workers postulated that certain metabolites of muscle activity accumulated in those circumstances and caused pain. Lewis and his colleagues (1931) developed the theory and suggested that there was an accumulation of substance "P" in the muscle working with a deprived blood supply. That substance passed from the muscle fibres into the surrounding tissue spaces, and there stimulated the nerve endings. Substance "P" has never been isolated, but it has been suggested that lactic acid or potassium, both substances known to be present in increased amounts in working ischaemic muscle, may well constitute the pain substance.

Pain from Lack of Blood

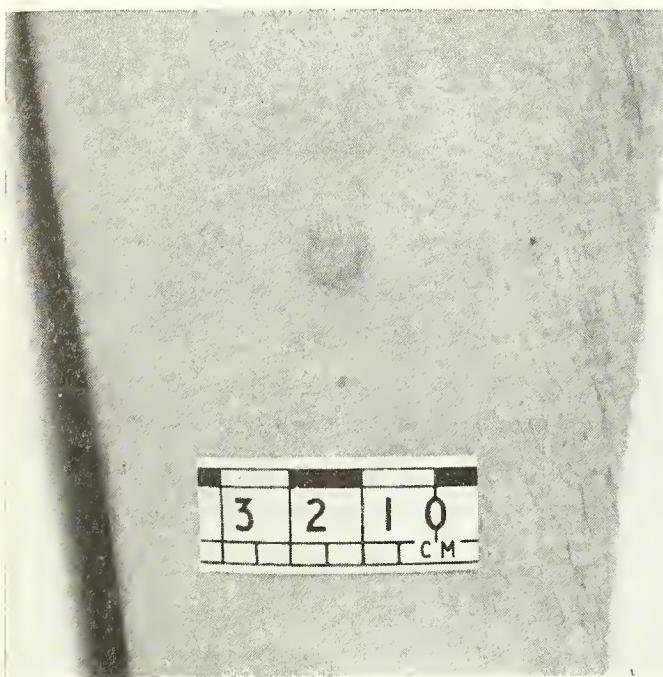
Pain associated with contracting muscle deprived of an adequate blood supply is important clinically. Classic examples are the pain of coronary disease and of intermittent claudication. Relief can be obtained only by resting the muscle mass concerned and by increasing the circulation to the area involved, thus reducing the production of and finally washing away the metabolites causing pain.

Pain in the tissues need not be associated only with a reduced blood supply. Migraine, a cause of severe painful disability in many subjects, is associated with marked dilatation of cranial blood vessels. Relief is obtained by using ergotamine, which constricts the dilated vessels. Chapman (1960) isolated from the skin of the tender areas of the head during an attack of migraine substances capable of causing pain and dilating the local blood vessels.

In addition to chemical causes, pain may be caused by increased pressure in the tissues. The pain of a swollen ankle is relieved when the swelling is reduced by cold compresses. The increased pressure due to accumulation of inflammatory exudate can stimulate the nerve endings by distortion. Pressure can also cause obliteration of local blood

vessels, thus interfering with tissue metabolism and producing substances themselves capable of causing pain.

Professor Keele and his colleagues at the Middlesex Hospital (1953) have added much to the knowledge of substances capable of producing pain. Their method is to raise a cantharidin blister on a volunteer's forearm and test substances on the exposed blister base.



1. Cantharidin blister on forearm.

The technique of the simple method is as follows. On the day previous to the test a 0.3 per cent. cantharidin plaster is applied to the shaved forearm and allowed to remain in place for several hours. On the following day a blister will have formed (fig. 1). The blister fluid is aspirated, and the blister base exposed by excising the overlying skin. The blister base is the deepest layer of the epidermis where there are exposed nerve endings, and it is on that layer that substances are tested for their pain-producing properties. The test solution is applied and the subject verbally describes the sensation aroused. At the same time he records the sensation kymographically by moving a lever over a pain scale. (fig. 2). Keele showed that the following caused pain:

- Acetylcholine 10^{-5} gm./mil.
- Potassium chloride 0.1–1 per cent.
- Hypotonic saline (below 0.3 per cent.).
- Hypertonic saline (above 3 per cent.).
- Acid solutions, below pH 3–3.5.
- Histamine 10^{-5} gm./mil (pain followed by itch).

Smith (1962), working with K. D. Keele, studied the effect of potassium more fully on the blister base. A direct relationship was found to exist between the concentration of the potassium applied and the degree of sensation experienced. The potassium level of normal tissue fluids is four molecular equivalents of potassium per litre (4 m.Eq.K/litre). At that concentration potassium produces no effect on the blister base. Slight pricking or stinging at 8 m.Eq.K/litre increases to the level of distinct pain at 32 m.Eq.K/litre, a level still far below that of intracellular potassium (114 m.Eq.K/litre). In tissue injury damage to the cell wall could allow a leak of concentrated potassium from within the cell and thus raise the level of extracellular potassium to a level capable of causing pain.

Study of the words used by those subjects during potassium stimulation of the blister base indicated that the sensation range of concentrations of potassium from 8–32 m.Eq.K/litre produced abnormal sensations, but they were definitely not pain. The subjects used the words "pricking," "stinging," "burning," and even "tickling" to describe the

sensations in this range. When a critical level of potassium was reached, 32 m.Eq.K/litre, pain was distinctly felt. The range of abnormal sensation below pain is known as metæsthesia. True pain, algæsthesia, is reached when the intensity of stimulation by potassium is sufficiently great to reach the threshold of pain. Metæsthesia is experienced during the early stages of a disease process and again during healing, when the degree of stimulation of the nerves in the damaged area is below that necessary to cause pain.

Blister fluid itself causes no pain in the intact blister. However, Keele (1957) showed that pain develops if the fluid is aspirated into a glass syringe and reapplied to the blister base after an interval of time. Blister fluid contains protein derived from blood plasma. It also contains an enzyme, protease. Contact with glass activates the enzyme, which causes the protein in the blister fluid to break down into a simpler polypeptide molecule. That polypeptide, a chain of linked amino-acids known as bradykinin, causes the pain. Lewis and Elliot (1961) have demonstrated the exact structure of the molecule and have succeeded in making pure synthetic bradykinin. The compound is very active biologically. It causes contraction of the gut and dilatation of blood vessels. In addition to causing pain it also produces, on injection into the tissues, the other cardinal features of inflammation: swelling, redness and increased local heat.

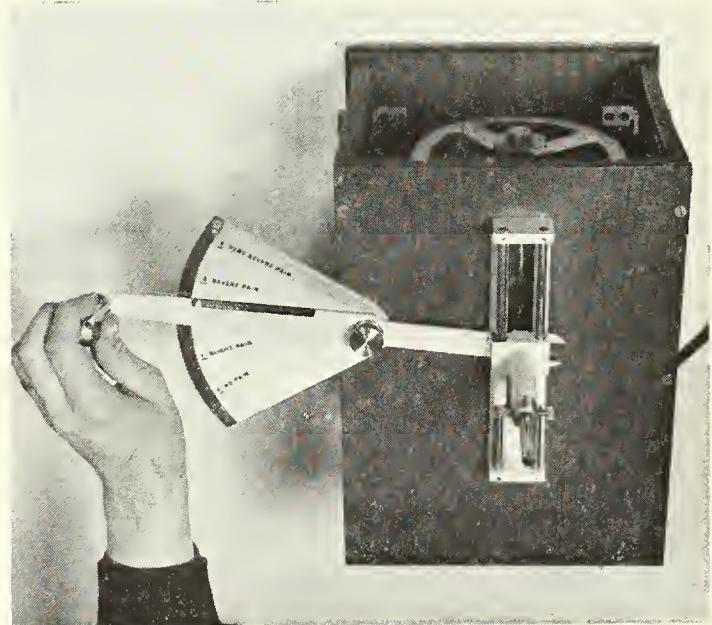
"Neurokinin"

Chapman's migraine substance is chemically closely related to bradykinin and it has been named "neurokinin." Because of some minor differences in biological activity it is believed to differ structurally. The substance is thought to be liberated locally in the tissues by some unknown mechanism, giving rise to the pain and dilated cranial blood vessels found typically during a migraine attack. "Neurokinin" formation is inhibited by ergotamine.

Bradykinin may constitute the chemical mediator of the inflammatory response, and further study of that substance and related polypeptides could result in the introduction of novel methods of pain control. Bradykinin blocking agents or substances capable of inhibiting the enzyme activity producing bradykinin may conceivably constitute the analgesic and anti-inflammatory agents of drug therapy of the future.

But what of the many agents now in use for the control of pain? What is there to be learnt of the nature of pain by the study of the pharmacological action of those drugs?

Of the vast array of analgesics available, two drugs stand



2. Kymographic pain recorder. Note hand-operated lever moving over scale of pain.

out for their general usefulness and effectiveness—aspirin and morphine. They are not without disadvantages, and much effort is directed at replacing those drugs by others equally effective in pain relief but without their undesirable side effects.

Aching muscle and joint pains, headache and minor degrees of inflammation respond well to aspirin, the time-honoured and proven drug for the treatment of rheumatism. Severe pain (fracture pain, pleurisy pain, or pain from coronary thrombosis) does not respond to aspirin even if the dose level is increased.

Aspirin Therapy

Nassim and Banner (1952) observed that patients suffering from rheumatism did not develop the expected redness of the skin after rubbing with ester of nicotinic acid, a proven rubefacient. Truelove and Duthie (1959) demonstrated that the inhibition of rubefacient erythema occurred only if the rheumatic patients were taking aspirin. Patients not on aspirin therapy responded to the rubefacient as normal individuals. Adams and Cobb (1958) have shown that ultra-violet-light erythema in guinea pigs can be prevented by aspirin, Sim and Smith (1961) have shown that it also is true for ultra-violet erythema or sunburn in man, and Smith that the extent of the interference with the erythema is related to the interval of time between taking the aspirin and the exposure to the ultra-violet-light.

Ultra-violet-light is absorbed into the deeper layers of the skin, and substances probably of a polypeptide nature are liberated which then act on the blood vessels in the skin by causing them to dilate. There is also a locally increased sensitivity in the area, which becomes tender to touch and in the response to pin prick. It appears that aspirin in some way—probably by enzymatic interference—prevents the liberation of the polypeptide that causes the dilatation of the blood vessels and the increased sensitivity of the nerve endings in the area involved. One might postulate that aspirin produces its anti-rheumatic effect and pain relief by some similar action.

Mechanisms of Pain Relief

Koll (1961) has reported that aspirin exerts no demonstrable action on the activity of the central nervous system. That observation supports the concept that aspirin's analgesic action depends on its ability to interfere with the production peripherally in the tissues of chemical substances capable of initiating the chain of events which results in pain. Such pains are usually of the mild and diffuse type. On the other hand the same worker has shown that morphine and other narcotic-type drugs can markedly suppress activity within the central nervous system. That accounts for morphine's ability to relieve severe pain arising from a wide range of different causes. Morphine blocks not only the activity of the nervous system in respect of pain, but also the normal action of certain vital nerve centres. In particular the respiratory centre is depressed, and in young or debilitated patients morphine given to relieve severe pain can cause coma and death from asphyxia. The widespread action of the alkaloid extends to the highest levels of the nervous system, and can produce pleasant euphoria and, frequently, excitement. That activity of morphine at a psychological level is related to the addicting properties of the drug, and seriously limits its value. Painful conditions likely to continue for some period of time cannot be treated with morphine because of the great likelihood that addiction will follow its repeated administration. The problem, of course, does not arise in terminal conditions, where morphine holds a special place in the treatment of pain.

Reviewing the present state of the pharmacology of pain helps to indicate the direction likely to be taken in the development of analgesics in the future. Increasing knowledge of the peripheral mechanisms of inflammation will help towards the discovery of newer aspirin-like drugs that will be used in the relief of mild pain. Pain from advanced

disease and severe trauma that can only be satisfactorily controlled within the nervous system itself will continue to require treatment by centrally acting drugs. New compounds in that class will have a more specific action on those nervous mechanisms subserving pain, without the undesirable side effects on vital centres which are the danger of our present-day narcotics.

Pain and its control, a dual philosophic and therapeutic challenge, has been with man since the dawn of time. A few of the answers are now known. The future holds promise of more.

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C. & D. as Daily

MEMORIES OF TWO EPISODES

ON two occasions in recent years THE CHEMIST AND DRUGGIST has converted itself temporarily into a daily newspaper, though only, it must be admitted, for four consecutive issues each time—at the London and Dublin meetings of the British Pharmaceutical Conference in 1953 and 1956. True, too, the issues were hardly *Daily Mirrors* in size or circulation. Nevertheless they presented, in miniature, much the same problems of organisation and production. Comparison with the *Daily Mirror* is deliberate, because the C. & D. *Daily Bulletin* made a special feature of its pictures of Conference events. The *Bulletins* appeared on the Tuesday, Wednesday, Thursday and Friday of Conference week. It will be appreciated that, Monday being the opening day of the Conference meeting, though a few pictures might be obtained on the Sunday—for example of members arriving—the pictures for the Tuesday edition had for the most part to be taken, developed, printed, seen, marked up, sent to the blockmaker, processed and delivered to the printers on Monday in time for fitting into the page and printing on Monday night. Copies had to be in the hands of Conference members next morning.

In London, with its relatively scattered Conference points, the Press agency responsible for the photographic work had to lay on a service of motor cyclists to pick up the exposed films and deliver the prints, the blockmakers to arrange for their craftsmen to work late and for the blocks to be delivered by special messenger to the printing works. A member of the editorial staff had to be available to tell the photographer what pictures to take, and at some point the Editor had to see the pictures, choose those for publication (or select portions of them) and decide on the sizes of the finished blocks. That point of time proved to be his lunch hour. Nor was that all. He had to be quite certain that the blocks, with their captions, would fit into the pages without further adjustment. Each of the pages had accordingly to be designed in advance, the captions written, and other text trimmed to fit into the general

scheme; nothing must delay the machines when they were ready to start running. The time-table was a tight one, with little margin for error, and there was, at the time of the London venture, no previous experience to draw upon. The enterprise was, indeed, very much of a gamble. Thanks to the enthusiastic co-operation of all concerned the scheme went through as planned, and in the event proved highly popular with Conference visitors—or so many of them were good enough to say.

In Dublin there were other problems. The editorial experience was, of course, by that time there from the London meeting. The staff knew by then how to go about the job. Distances between Conference meeting places, blockmakers and printers were in Dublin more manageable, and the motor cyclists were not needed. On the other hand the work had to be done away from home, in a different country, with previously unknown photographers, blockmakers and printers. It may have seemed an alarming venture, but for the paper it was a matter of prestige. The C. & D. being the official organ of the Pharmaceutical Society of Ireland, hosts of the Conference, it had to put on a good show for their sake and its own. It successfully did so, principally because photographers, blockmakers and printers in Dublin entered fully into the spirit of the enterprise. They made it a point of honour to do at least as well as their opposite numbers in London, and one member of the C. & D.'s own staff devoted his time

exclusively to the task of seeing the work through the hands of the printers. In one respect the Dublin daily demanded a higher degree of organisation than the London effort. Not only did every Conference member receive his copy each morning, but so also—through the post—did every pharmacist on the registers of the Pharmaceutical Society of Ireland and the Pharmaceutical Society of Northern Ireland. There was even an additional complication. In order that the "dailies," or some of them, could be incorporated in the ordinary weekly issue—for there was not the organisation to prepare separate stories for both, even had there been any advantage in doing so—the pages had to be transported or transmitted from Dublin to London. To fly the actual types and blocks across was out of the question. For one thing they could not be released in time from the Irish printers. For another they would be a heavy freight, vulnerable to becoming "pied" (damaged or broken up completely in transit). The sending might, too, have given rise to Customs delays. Instead, "flongs" were sent over by air. Flongs are *papier maché* moulds, negligible in weight, into which molten metal can be poured to make metal castings. Customs hold-ups were smoothed out by prior negotiation and the planes were met in London to speed the flongs to the casters. Some loss of printing quality may certainly have been the price, but the achievement of getting pictures and story effectively into the hands of subscribers was well worth while.

PAN COATING OF TABLETS

TABLET coating has been practised in one form or another (formerly as pill coating) for over a thousand years, records showing that nauseating pills were, as long ago as that, coated with a mucilage of psyllium seed. The pills were then, of course, coated and handled singly and by very primitive methods. They were picked up singly on the point of a needle or with forceps, then dipped into the prepared solution. The method failed to produce a perfectly smooth coating.

Just over 100 years ago the first tablet machine was patented by Professor Brockdon and it was not long before, in line with industrial progress, the mechanically revolving cylindrical coating pan came into use. Today, increasing numbers of coated tablets are being produced and marketed by manufacturers of pharmaceutical products. It is reasonable to put the proportion of coated tablets to tablets of all kinds at somewhere in the region of 20 per cent.

The reasons for coating tablets are:—

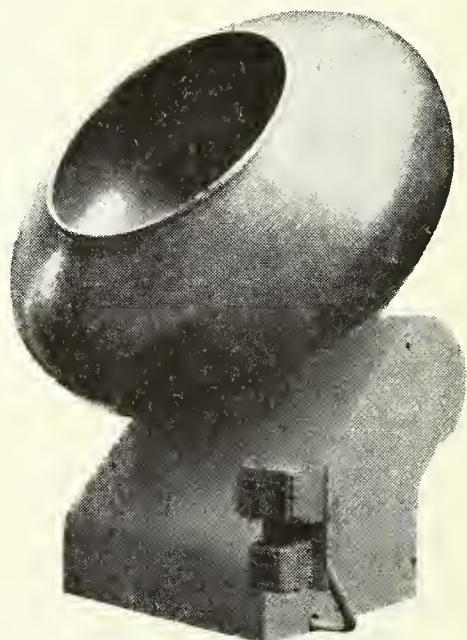
1. (The prime reason): To mask unpleasant tastes and, with some materials, odours.
2. Many drugs and medicaments require protection against the atmosphere, since atmospheric oxygen or carbon dioxide may cause chemical reaction; some substances, too, may absorb moisture and in consequence become hydrated, or the drug may react chemically with the moisture vapour of the air. Examples are powdered extracts, certain vitamins, and some organic salts.
3. Special coatings may be applied to control the action of the drug. The type of coating for that purpose is called enteric coating, and the techniques by which it is applied have been designed to give control of the release of the medicaments. It is important with some drugs that they should not be allowed to come in contact with the oral mucosa.
4. Incompatibles may be incorporated into the same tablet by producing the tablet in a laminated form during the coating processes. That prevents any interaction that may otherwise take place during the earlier granulation operations.

Why

and

How

RAPHAEL
SIMONS



Coating pan manufactured by C. Skerman & Son, Ltd., London, S.W.6. The pan is 5 ft. in diameter and automatically discharges the tablets through a chute at the back.

5. Another reason for the coating of tablets is that the tablet coating enhances the appearance of the product, the bright attractive polished tablets having greater sales appeal.

Method of Coating

Pharmaceutical manufacturers have, by skill and science, developed techniques for tablet coating that are in operation throughout the world, modified only by certain special innovations of method.

The coating of tablets may be subdivided into distinct stages, namely the application of a sealing, water-proofing or enteric coating, subcoating, smoothing, colouring, finishing and polishing. For some medicaments the sealing processes are not necessary but the number of modern medicaments in that category is small. It is essential that the tablet cores should be free of loose powder before the commencement of the coating application, and preferable that they

should be compressed so that the tablet edges are as thin as possible. The faces of the tablet should have high convexity and the tablet should be of good proportion. If more attention were paid to these details, many of the problems that can arise in the subsequent coating would be eliminated.

Waterproofing, Sealing and Enteric-coating

The most common waterproofing and sealing agent used in the industry is a solution of arsenic-free shellac. Great care should be exercised at this stage to ensure that only sufficient layers of the shellac are used to eliminate moisture from the subsequent syrup applications penetrating the tablet, with care not to retard disintegration. Some manufacturers have developed the technique of applying silicones and film coating, using hydroxyethylcellulose at this stage.

In applying an enteric coating a variety of techniques and materials may be used. One of the most recent materials to be exploited for this use is cellulose acetate, and there have been several publications covering its use for the purpose, which when properly applied is quite successful in achieving the desired results.

Subcoating

The subcoating of tablets must be considered the most important part of the process, as unless it is carried out efficiently innumerable difficulties will ensue during the rest of the operation. There are many techniques of applying this part of the coating, but the general principle is to apply a solution of syrup, gelatin and acacia, or other similar combinations. The tablets are revolved in a coating pan and sufficient solution is added to ensure that all the tablets are completely covered. When the tablets are tacky a subcoating powder is applied until no wet tablets are showing. Each application is dried out thoroughly with the use of hot air, and only when the tablets are perfectly dried and smooth are subsequent applications applied. The process is continued until all the edges of the tablets are sufficiently covered. It may be taken as a general guide that this stage requires about 25 per cent. of the original tablet weight to ensure good results. The tablets should be transferred into a clean coating pan in order to continue the process.

Smoothing the Tablet

In order to prepare the tablet surfaces to take colour, it is essential that all the surfaces shall be completely smooth. The tablets are again revolved in a pan with sufficient warm syrup (which generally consists of plain syrup and a mixture of calcium carbonate, starch and talc or variations according to preference). Each application should be sufficient to cover the tablets completely, and must in all circumstances be thoroughly dried before successive coats are applied. Failure to do that results in moisture breaking through at a later date and spoiling the finished coat.

Colouring

Traditional pan coating methods for colouring pharmaceutical tablets have changed little over the years, despite time-consuming operations that are difficult to carry out and reproduce. The disadvantages of the traditional methods are the large number of coats necessary (from forty to sixty), the difficulty of reproducing colour shades from batch to batch, the limitation to non-toxic dyes of the soluble variety, and the relatively poor stability of ageing. The use of dispersed colours greatly reduces the disadvantages of the method, as it enables coating to be done with five to twenty-five coats. The colour is stable and is reproducible from batch to batch.

The method reduces operating time, and can be carried out by relatively unskilled operators. For instance, when water-soluble colours are used, up to twenty coats are necessary to smooth the tablets before adding the colouring coats. With dispersed colours the number of coats is greatly reduced, and in some cases eliminated entirely: also the drying time between coats is greatly reduced.

The basic difference in use between soluble and dispersed colours is that the dispersed colour is suspended in the sugar syrup instead of being, like the soluble dye, dissolved into it. A further material, titanium dioxide, suspended in the syrup, is of great help in producing pastel shades and white tablets. The amount of colour per tablet varies according to the result required, but in all circumstances a highly concentrated suspension is advisable, smaller or larger amounts being added to get the desired depth and shade.

The dispersed colour and/or titanium dioxide should be mixed with a small amount of the sugar syrup before further dilution to the working strength. The colour should never be added to the syrup, as it would tend to agglomerate and make dispersion difficult.

For preliminary trials it is recommended that 1 oz. of dispersed colour be suspended in 40 oz. of sugar syrup and applied at the end of the panning process. The amount of colour may be varied, and the shade can therefore be controlled by the amount of colour added in the smallest number of coats to get full coverage. As an example, if it was necessary in order to get a deep red shade to use ten coats of a 1-40 suspension, the same shade could be achieved by using five coats of a 1-20 suspension. The amount of titanium dioxide used depends on the type of effect required, but for a standard pastel effect it should represent 10 per cent. of the weight of the colour used. The finishing and polishing of the tablets after the colouring process may be carried out in the normal way.

Polishing and Finishing

When the final applications of the coloured syrup are applied the pan should be stopped before the tablets are dried and sealed off from the outside air. At regular intervals the pan should be turned gradually to prevent the tablets sticking together. That allows the syrup to crystallise out slowly, and produces a satin-like finish. At the correct stage the coated tablets are transferred to the polishing pan. Manufacturers have their own techniques for the polishing of tablets, and the operation is usually carried out in a wax-lined coating pan. The tablets are allowed to revolve for some period, gradually picking up the wax from the pan and rubbing together, thereby producing a high gloss. Application of a wax solution is sometimes preferred.

Equipment

The conventional equipment for coating tablets has changed little throughout the years, though it has become a little more established in recent years. Recently a prominent company has developed interesting innovations to the coating pan, enabling a manufacturer to coat at one time several hundreds of thousands of tablets. The pan has been designed so its contents discharge automatically, thereby reducing the handling. The principle of the operation is that, when the pan is automatically tilted, a valve opens in the bottom of the pan, allowing the products to discharge through a hollow tube to the rear of the machine. The pans are now being produced up to 7 ft. in diameter. For the manufacturer of large quantities of one kind of tablet, the new type of pan reduces labour costs considerably.

With this method of discharging, little extra floor space is required, and it is usually unnecessary to alter any air feed or discharge pipework, such as one normally finds in pan installations. Another advantage is that the pan can be operated at any angle, with little modification. It has been found, from tests, that a 5-ft. diameter pan can be completely discharged in approximately four minutes, depending, of course, on the type of material being panned.

No longer are the methods of tablet coating shrouded in great secrecy, and several informative papers on coating have been published. Nevertheless the coating of tablets today remains one of the processes in tablet making that requires handling by experts—technologists who have, in fact, studied the art and science of the business.

FROM APOTHECARY TO PHARMACIST

A study of changes of title

T. D. WHITTET, B.Sc., Ph.D., F.P.S. F.R.I.C.

(Group chief pharmacist, University College Hospital, London. Liveryman, Society of Apothecaries)

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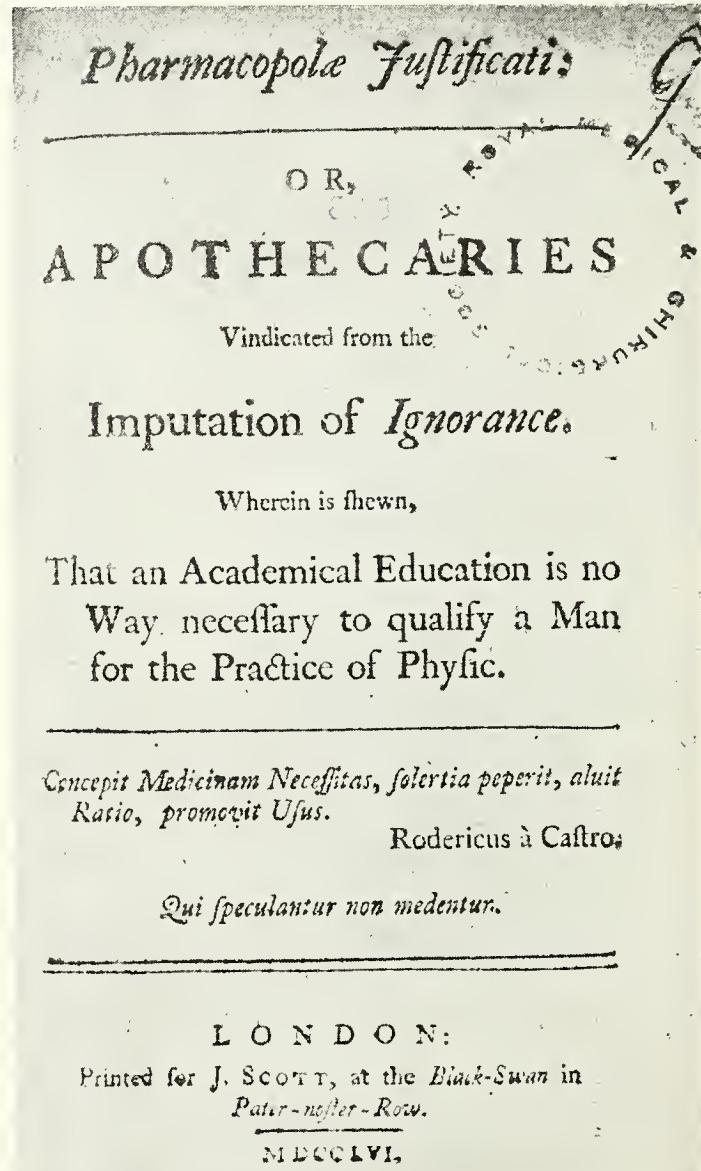
DERIVATION OF THE TITLES

SOME form of the word APOTHECARY has been used to describe the practitioner of pharmacy in most countries of the world, and is still the usual name in Scandinavia, Germany, Austria, Holland and German-speaking Switzerland. In other countries, notably in the British Isles, France, Italy, Spain, Portugal and the United States the term APOTHECARY though formerly used, has generally been replaced by some form of the word PHARMACIST and the older title is rarely, if ever, encountered. In colonies, and independent countries of colonial origin, usage has almost always followed the trend in the parent country. In some countries, such as England and Ireland, the reason for the change is obvious, since there the apothecaries, as a profession, changed from pharmacy to medicine, but in others the cause is less apparent.

Origins of the Titles

Several papers have been published on the origins of the titles APOTHECARY and PHARMACIST (Fialon, 1920; Guitard, 1949, 1958; Wilkening-Wiesloch, 1930). There appears to be general agreement that the word APOTHECARY originated from the Greek *ἀποθήκη* (APOTHEKE) from APOTHEMI (to lay aside) which became APOTHECA in Latin. According to Kremers and Urdang (1951) the word was commonly applied during Roman antiquity to the room used for storing wine. The same authors state that Galen distinguished between his APOTHECA or storeroom and his IATRON, the room in which he saw his patients. The term has been adopted in many countries with slight variations of spelling. Kremers and Urdang (1951) state that the French word BOUTIQUE (shop), the Italian BOTICA and Spanish BOTECA are all derived from APOTHEKE, but Guitard (1949) emphatically denies that the Greek word ever signified BOUTIQUE, being entirely reserved for a food store.* In France the word appears to have retained that sense in the Middle Ages under the name APOTHEQUE. Wilkening-Wiesloch (1930), on the other hand, points out that the Codex Justianus in the sixth century used the term APOTHECARIUS for all those keeping a shop. The word APOTHECK has been used for a pharmacopœia (Kremers and Urdang, 1951).

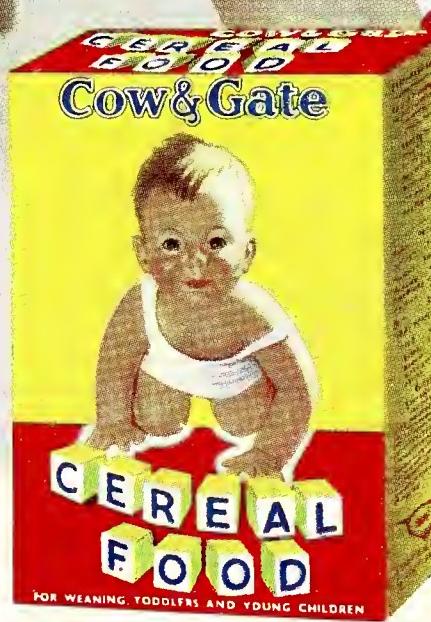
Daems (1956) has pointed out that the word APOTHECARIUS was used in mediaeval monasteries in several senses. In the earlier period the term APOTHECA was used for a store, often a wine store, and had no connection with pharmacy or medicine. That meaning persisted for several centuries. Parallel with it the person in charge of the store was called an APOTHECARIUS (sometimes spelled APOTECARIUS). Daems shows how that has led some historians to assume that every mention of the word referred to a practitioner of pharmacy, whereas, in at least some examples,



A London pamphlet of 1724, showing use of Roman title pharmacopœia.

there is no evidence to support such an assumption. He quotes Du Cange (1883) as giving four different meanings for the early usage of the term APOTHECARIUS:—(1) APOTHECARIUS ET CELLARIUS, the manager of the monastery stores, sometimes including the kitchen, living quarters and library. In the fifth century that official was apparently an administrator and often deputy of the abbot. (2) In the twelfth century the APOTHECARIUS was apparently placed among the traders, and was held to be a kind of brewer (of medicines?). (3) Sometimes the term appears to have been applied to the monastery accountant. (4) Another meaning appears to have been a small dealer, not necessarily of

*The word *bodega* is still used for a wine store in Spain and the words *bodega* or *bottega* are used in several continental countries for wine shops or special restaurants where wines are sold.



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This new attractive advertisement, featuring not only our Full Cream Milk Food and Cereal Food, but also our latest range of Dairy Weaning Foods, is appearing in the magazine press in full colour during the next few months and will also appear in the National Medical and Nursing Press during the same period, in black and white.

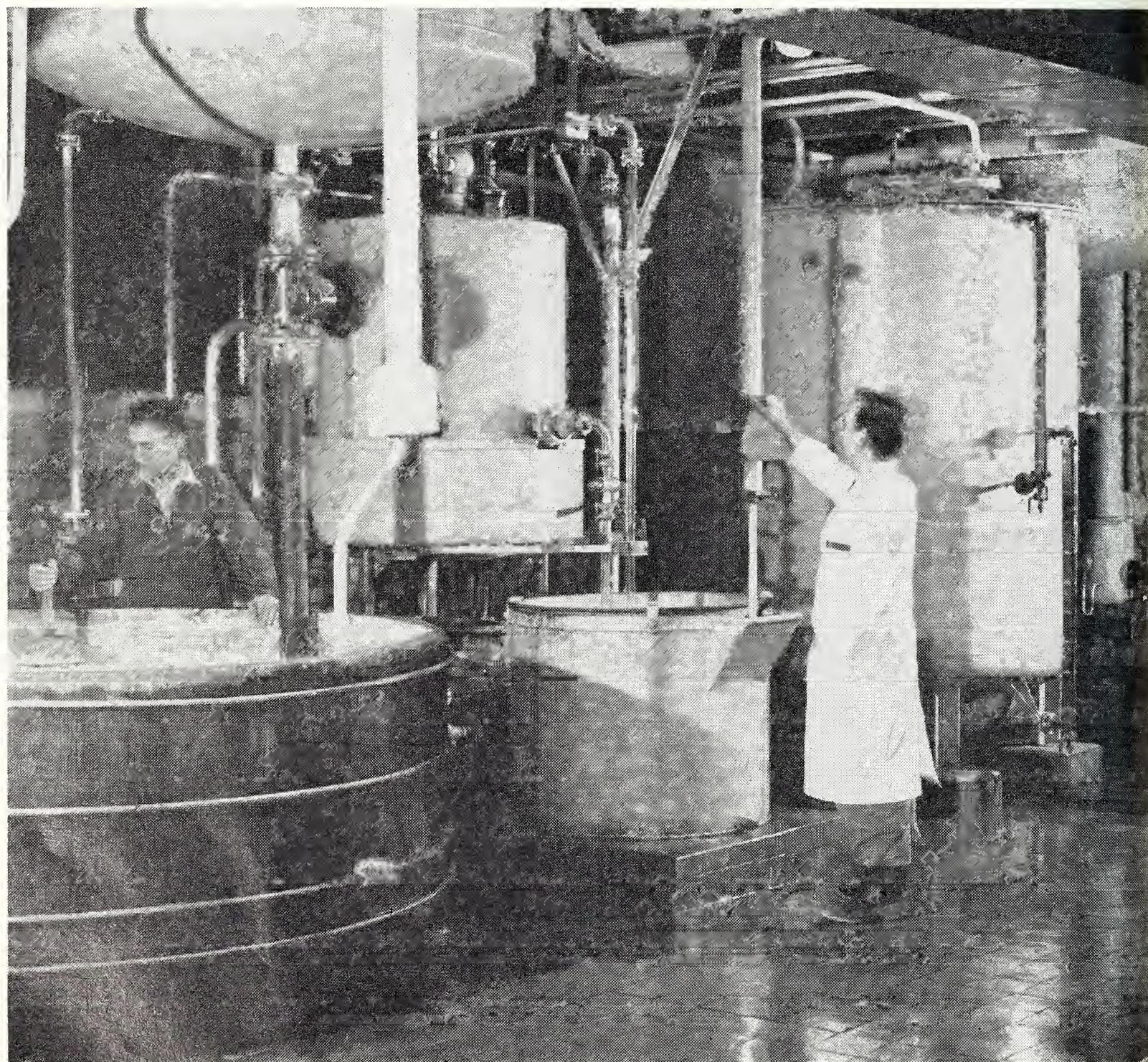
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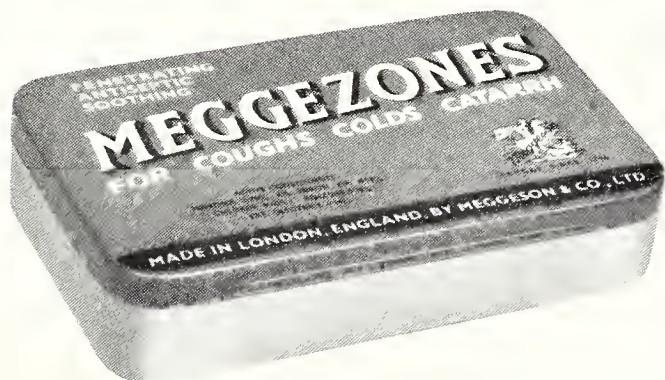
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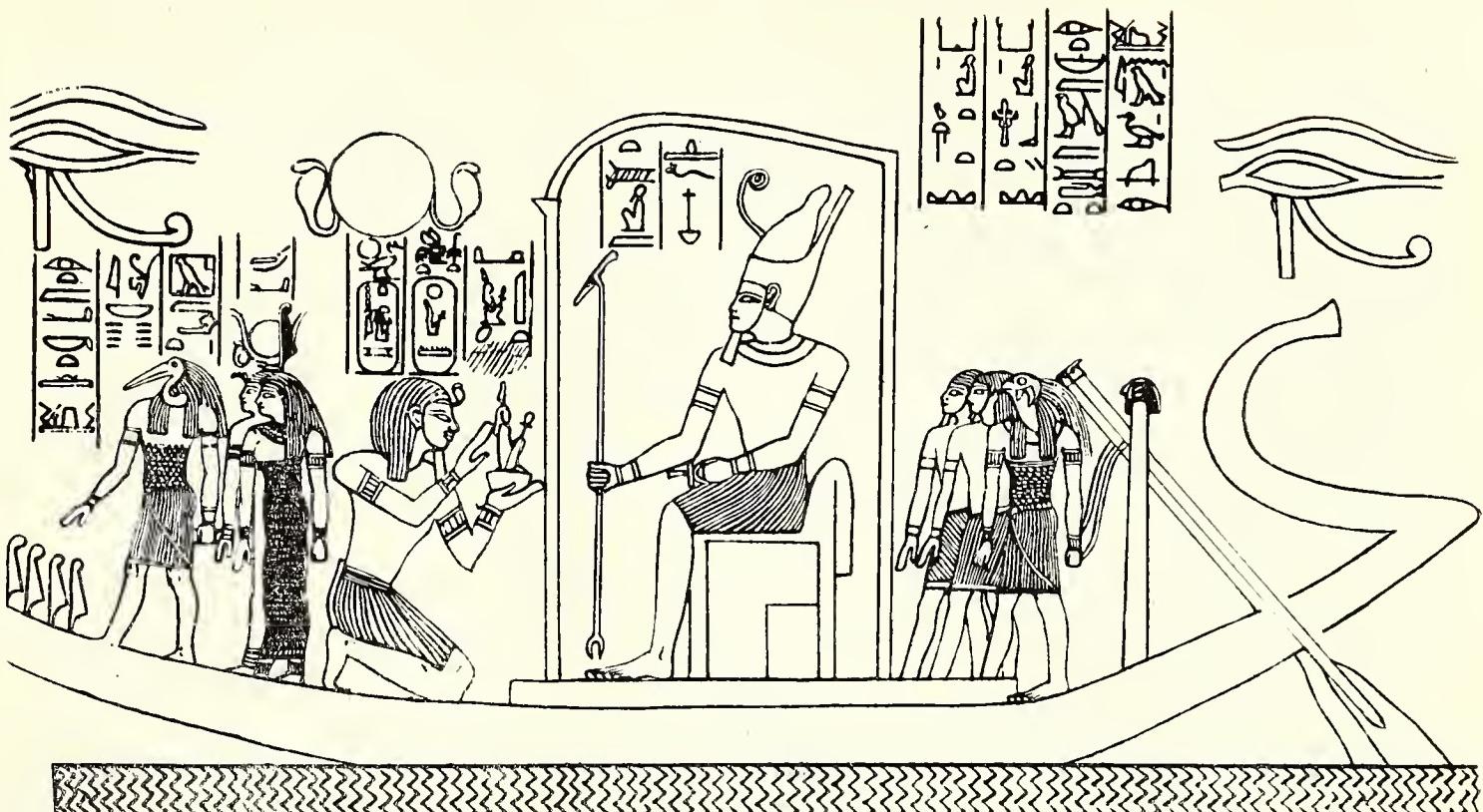


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QUALIFY FOR BONUS TERMS

The bonus is one dozen tins of Meggeson Glycerine and Blackcurrant Pastilles or one dozen tins of Meggeson Glycerine Lemon and Honey Pastilles, or one dozen tins of Meggeson Gee's Linctus Pastilles for each order to the value of £12.



An Egyptian diagram in which the word pharmaki appears in hieroglyphics in a picture carved on stone in a temple dated c. 15 B.C.

medicines (see the early meaning of MERCER in the section dealing with England). Daems concludes that it cannot be assumed that the use of the word APOTHECARIES in documents earlier than the twelfth century necessarily refers to a practitioner of pharmacy.

It appears that the link between the earlier storekeeper APOTHECARI and the truly pharmaceutical APOTHECARIES was through the gradual inclusion of wines, especially spiced wines, herbs, spices and medicines in the monastery store, resulting in increased specialisation of the keeper of the stores. An overlapping of functions between SPICERS and APOTHECARIES has occurred in several countries. Thompson (1897) has stated that Richard Fitznigel was an APOTHECARY before he became Bishop of London and that statement was recently repeated by Copeman (1960). Presumably the source of those statements is the mention of Ricardus Nigelli in *Anglia Sacra* as APOTHECARIUS. Daems states that there is no evidence that the term is used here in its pharmaceutical sense.

Pearce (1916) in "The Monks of Westminster," however, quotes several passages from the records of the monastery in which the word "apothecarius" is undoubtedly used to indicate a pharmaceutical apothecary but only in one instance is there definite evidence of a monk acting as an apothecary. The Abbot Walter de Wenlock (died c. 1283) is described as the son of William le espicer (apothecary) (sic) and of Agnes la specere.

The following are records of purchases from apothecaries:—1309-10 "Solut' Ricardo de Reding apotecario pro cura tibie Prioris iii s vi d." 1416-17 "Et solut' apotecario London pro glistro et electuario comfort pro domino tempore infirmitis sue xvi s. viii d." Jan 11th, 1496. "Item . . . potecario pro lozengis cordialibus pro domino abbatte ii s iii d."

Under the biographical details of the monk Nicholas de Harlestone is the following:—

"Solut Thome de Waledene apoticario pro Nicholas de Harlestone 30s. 8½d. 1328-9. Was continuously in the sick-room from 1350 till his death. (Infirmerer; had a camera in the Infirmary 1351-2 where his medicines are also entered). Defunct 24 June 1357. Infirmerer 1356-7 Almoner."

This strongly suggests that Nicholas de Harlestone had the medicines under his care whilst holding the post of

infirmerer although it could mean that the medicines were for his use as a patient but this is less likely.

There has been more controversy about the origin of the word PHARMACY and its related terms. Most authorities consider that they are derived from the Greek word PHARMAKON, meaning a remedy. Schelenz (1904), on the other hand, stated that the word pharmacy arose from the Egyptian word PHARMAKI, a pilot, i.e. a conveyor of security against disease. The word is found in hieroglyphics on a picture carved in stone in a temple dated about the 15th century B.C. Wilkening-Wieslock (1930) disputes that claim and states that two Egyptologists he consulted categorically denied that the word PHARMAKI or its root appear in old Egyptian language.

Kremers and Urdang (1951) and Thompson (1929) state that pharmacy is related to the Egyptian word PHARMAGIA (magic). Both the latter and Guitard (1958) point out that the meaning of the Greek word PHARMAKON developed from that of a charm or a magic agency, exerted by plants with healing, but also possibly with poisonous effects, and that it often meant a poisonous or a purgative drug. Homer apparently used it in that sense. Guitard (1958) and Fialon (1920) quote examples of the use of the word FARMACIE to describe poisons and laxatives. The word PHARMAKON can also mean a dyestuff. Jonckheere (1955) strongly refutes the origins of the word pharmacy from Egypt in the following statement:—"One final locution remains to be rejected: pharmaki . . . which Kremers and Urdang take up again in their account from an erroneous interpretation by Schelenz. . . . This assertion rests wholly upon the presence, in the decoration of a tomb at Thebes of the 19th Dynasty, of a barque piloted by the god Thoth, with the words that (have been given) . . . a hazardous speculation of etymology. . . ." This seems to be the final word on the subject. From those rather sinister antecedents the word came to mean simply a remedy and the supplier of the remedy became PHARMACOPOLIS (Latin PHARMACOPOLA or PHARMACOPOLUS).

Good (1796) states that, of all the terms used by the Greeks and Romans to describe the retail occupation of the apothecary, the term PHARMACOPOLA is the most appropriate, though Cicero used it of a travelling apothecary who was a sort of mountebank. Derivatives of the title

were frequently used in Great Britain in the seventeenth and eighteenth centuries. Barrett (1905) refers to the publication in 1724 of a pamphlet "Pharmacopoeiae Justificatae; or the Apothecaries Vindicated from the Imputation of Ignorance, wherein is shown that an Academical Education is nowise necessary to qualify a man for the practice of Physic."

Similar terms in ancient Rome were PHARMACOPOEOS, makers of remedies and PHARMACOTRIBAE or PHARMACOTRITAE, drug grinders. Fialon (1920) stated that, of fifty words derived from PHARMAKON cited in Bailly's Greek Dictionary, the terms PHARMAKEUS, PHARMAKEUTES, PHARMAKIS, PHARMACOPIOS, PHARMACOPLES, PHARMAKOS, PHARMAKOTRIBES, PHARMAKOURGOS and PHARMAKTOS all signified, almost indiscriminately, poisoner, sorcerer or pharmacist. In the same book the word PHARMAKEIA described either the making of medicines or poisons. That sense persisted in England up to the nineteenth century, for the following

references appear in the Oxford English Dictionary "Elworthy; Evil Eye, 1895, 445: 'Pharmacy consisted in divination by means of medicated drugs'" and "1830, Scott, Demonology, 'a user of pharmaceutic enchantments'." That meaning was, however, the exception rather than the rule in England.

Kremers and Urdang (1951) state that the name PHARMAKOI was applied to the two human scapegoats who, in early Athens, were driven out at the Thergalia feast as a symbol of the purification of the city from all evil. Those men were considered as personified PHARMAKON, in the meaning of a "purifying purgative," hence the name. A similar meaning has been brought into Christian writings for we find the word PHARMACOTHEON used as a divine medicine in the following quotation "1633. Austin, Medit. (1635), 113: 'By a general Pharmacothcon, when he gave his body full of all these vertues in the Sacrament to make his sufferings ours'." (O.E.D.)

Thomas Borthwick, 1615-75

THE FIRST SURGEON APOTHECARY IN SCOTLAND

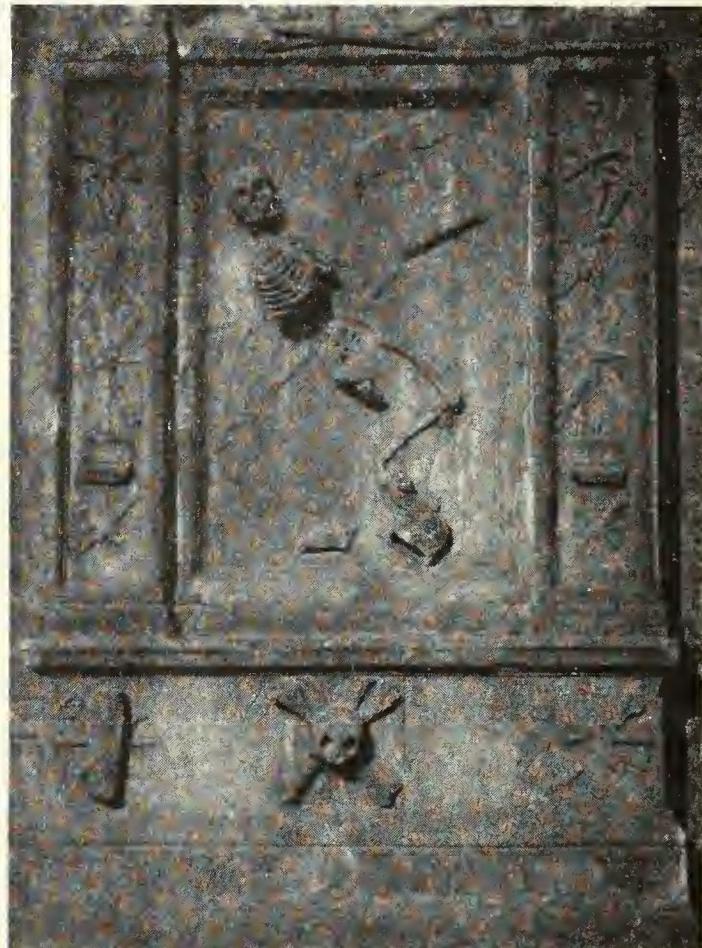
C. G. Drummond

VISITORS to the historic and beautifully situated churchyard of Greyfriars Kirk in Edinburgh are offered an interesting display of tombstones and family vaults, the variety of which compelled Robert Louis Stevenson to write a fascinating chapter in his "Picturesque Notes." To pharmacists, the stone deserving of most attention is a nameless one on the eastern wall of the church itself. To them it should mean more, even, than the Martyrs' Monument, erected to the memory of those who "glorified God in the Grassmarket" by death for their religious beliefs, or the Covenanters' Prison, or the plot of ground in which lies Greyfriars' Bobbie, the faithful dog which inspired Walt Disney to make a film. For the stone marks the resting place of James Borthwick, whose importance to pharmacy in Scotland has been insufficiently appreciated. The centrepiece of the stone displays a rather grisly skeleton, with a book in its left hand, striking an attitude that would not be out of place were the figure clad in the national costume. A panel on each side depicts the surgical instruments of the seventeenth century, and the work of art is completed with a skull and crossbones at the foot.

Two Strenuous Weeks

The present writer's interest in James Borthwick is of many years' standing. It was reawakened recently by the discovery in the National Library of Scotland of an account for Borthwick's professional attendance and medicines used in the service of the Marquess of Douglass in the year 1674. The account covers the closing fortnight in the life of that lady, and a glance through the items supplied indicates that every effort was made to keep the patient on this side of the grave, though one is left with the feeling that there may be worse experiences than death, and that, so far as the noble lady was concerned, she may have been glad to rest in peace. There can have been little rest for her ladyship in what may well have been the most strenuous two weeks of her life.

It will be observed that, on January 15, a plaster was applied to the navel of my lady (at a cost of 16 shillings) and that she partook of two drachms of oil of amber. The following day, a clyster (or enema) was administered, to be followed the next day by a cordial julep, a plaster between the shoulders, and eight doses of "cordiall" powders. The assault was resumed the following day with a dose of hysterick and purging pills, two blisters for the ear, a suppository and 7 ounces of a cordiall, and antihysterick julep. It is easy to appreciate that a condition of hysteria might,



Borthwick's tombstone in the churchyard of the Greyfriars Kirk, Edinburgh.

at that stage, require attention. But the dawn of a new day brought the administering of yet another enema, treatment for the mouth, and a poultice for the sole of the foot. Further medicines were given, but by January 30 there was no need for continued medication, and the apothecary rendered his last services in the form of "ane Embalming and ane Embowelling," together with the recognised perquisites of the period (comprising the supplying of charcloths and such items as balsams and oils for the coffin—a highly lucra-

<i>My Lady Marquess of Douglas her Lady except to James Borthwick apptd in Est.</i>	
for 15 lbs of my Lady a plaster for a Rabit	17s 0d
for 12 drams of oyl in amber in a glasse	000 18
for 12 drams of a powder for a Rabit	001 18
for 7 drams of a powder for a Rabit	002 02
for a plaster ointment to provide	000 00
for a poultice for broke	000 18
for 8 drams of Cornhill powder	000 18
for 12 drams of Saffron & purging pills	000 08
for a respiratory plaster for a Rabit	000 03
for a poultice	002 08
for 7 drams of a powder of Antimony powder	001 18
for 12 drams of a powder for the quinsy & root of a mouth	000 06
for a poultice for the quinsy & root of a mouth	001 10 0
for 12 drams of a plaster for a fox of a foot	003 00
for 12 drams of a powder of Antimony powder	000 12 0
for 12 drams of a powder of a pippofruit	000 08
for 12 drams of a powder of log & flowers in a pot	000 00
<i>C Summa totalis - 194 18</i>	

An account for medicines and services for a period of hardly more than a week. The amounts are in Scottish pounds, which the text explains were of less value than the English pound. For readers who find the account difficult to decipher the details are given in the text of the article.

tive finale, as will be seen). It is only fair to James Borthwick to point out that the figure shown is pounds Scots, which were equal to about one-twelfth of a pound sterling.

James Borthwick of Stow, in the county of Midlothian, lawful son to the family of Cruixton, was born in 1615, and served his apprenticeship as an apothecary or pharmacist. After a spell of service with the Scottish forces in the wars with England, he returned to Edinburgh with considerable experience. At that time the barber-surgeons, who were incorporated in 1505, had fewer members than was considered necessary or desirable, and they accepted into their ranks James Borthwick and Thomas Kincaid, who became surgeon-apothecaries. At the instigation of Borthwick, who had been a member of the town council of Edinburgh for about ten years, and who was, in addition, a Commissioner to the Scottish Parliament, the new set-up was formally recognised. Maitland's History of Edinburgh (1753) states:

"Upon application to the Common Council of Edinburgh, they, by their Act of 25th February, in the year, 1657, erected the Surgeons and Apothecaries into one Community, which, with former Privileges, were confirmed by Charles II and ratified by Parliament on the 22nd August, anno 1670, as they were sometime after by Letters of William and Mary, of the 28th February, in the year 1694, with an additional grant of a Liberty to practise within the Counties of East, West and Mid-

Lothians, the Shires of Fife, Peebles, Selkirk, Roxburgh and Berwick, which was confirmed by Parliament on the 17th July, anno 1695.

"The Arts of Surgery and Pharmacy being thus united, the Corporation (i.e., of Surgeons) laid aside the Barber Craft, which occasioned the Common Council, by their Act of the 26th July, 1682, to recommend to the Company (again, the Surgeons) to take care to supply the Town with a sufficient number of Persons qualified to shave and cut Hair, on such terms as they could best agree upon."

A Union That Helped Pharmacy

The union of surgery and pharmacy of 1657 was not entirely satisfactory from the point of view of the latter, but it did much to put pharmacy on a proper footing, for all who wished to practise the art in the city had now to submit themselves to examination. Not only was it compulsory to provide evidence of sufficient skill and knowledge, but the drugs offered for sale were subject to inspection, and any medicament that did not reach the required standards was destroyed in the presence of the baillies who, in company with the apothecaries, carried out the inspection. But while, on the face of it, there appeared to be harmony in the fusion, the surgeons remained jealous of their rights so far as surgery was concerned. Nor was there a complete unity

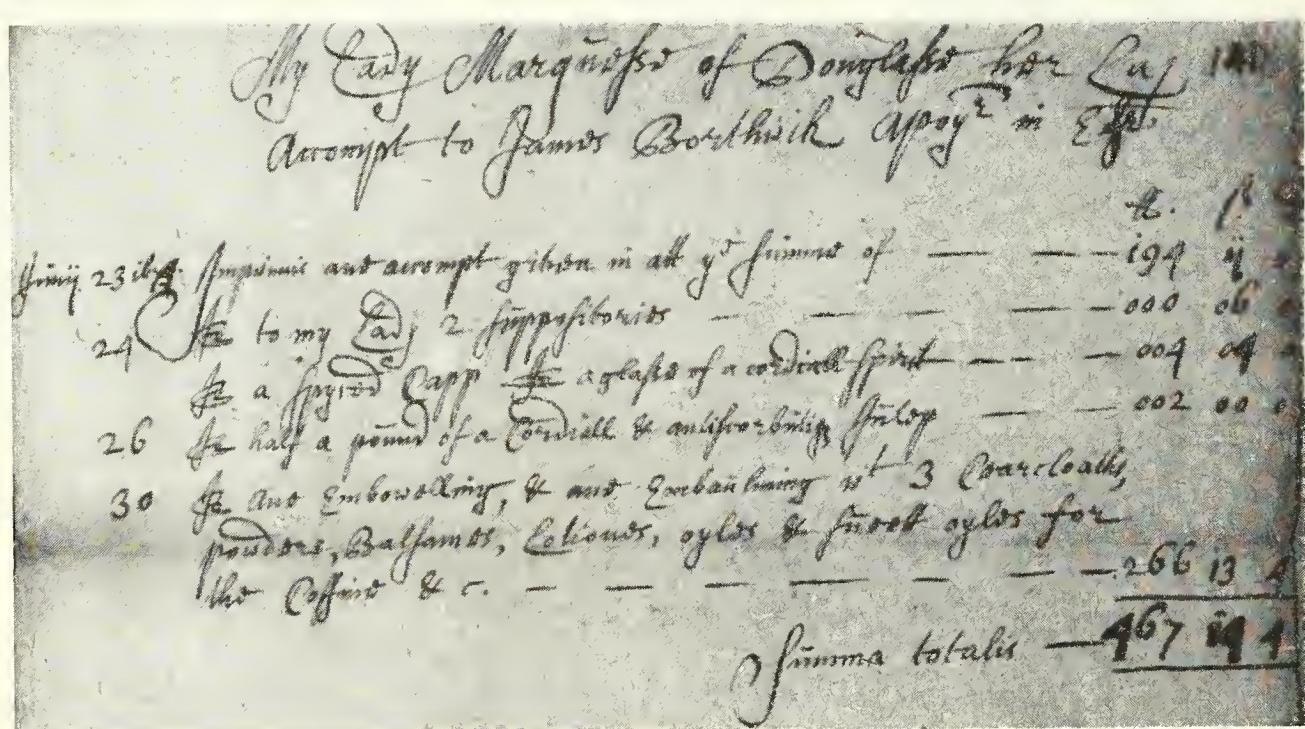
of interest between the surgeons and the physicians, for in 1682 there was open disagreement between them over which body should carry out the inspection of apothecaries' shops. The physicians, by an Act of the Privy Council ratified in 1684, gained the powers they wanted in that direction, with authority to visit all apothecaries' shops in the city and suburbs of Edinburgh, "calling to their assistance one or two of the oldest and ablest of the Brotherhood of the Apothecaries." The wording of the Act suggests that the apothecaries were not wholly in favour of the inspection, for the baillies and magistrates were present to lend official weight to the decision of the brotherhood, the Act ordaining that "the apothecaries when required shall attend and assist the said physicians, and that all Masters of Apothecaries' Shops and Chambers and their Servants shall receive the Visitors of the Shops with all respect, and expose to their view all the drugs that shall be called for and that upon Oath to the Administratice, both to themselves and Servants, and shall quietly and peaceably suffer the drugs that shall be found insufficient by the said Physicians to be ejected and destroyed, as they will be Answerable. And suchlike Ordaining that no Person who has not been examined and admitted by the Fraternity of Apothecaries be suffered in any time coming by the Magistrates aforesaid, to keep any Apothecaries' Shops or Chambers, except such allenarly (i.e., only) as shall be tried and approved by the President and Censors of the said Royal College."

From that time the physicians in Edinburgh ceased to dispense medicines. For many years thereafter the apoth-

to the high-standing pharmacy has enjoyed in the capital of Scotland.

My lady Marquesse of Douglass her ldy (i.e., ladyship)
accomp. to James Borthwick apoyr. in Edr.

		lb. s. d.
	Imprimis ane accomp in all ye summis of ...	175 09 00
Jany. 15	Item to my lady a plaister for ye Nabill ...	000 16 00
16	2 drachms of oyle of amber in a glasse ...	000 18 00
16	" a Clyster ...	001 16 00
17	7 oz. of a cordiall Julip in a glasse ...	002 02 00
	" A plaister betwixt ye shoulders ...	000 09 00
	" Materials for broth ...	000 18 00
	" 8 doses of Cordiall powders ...	001 12 00
18	" A dose of hysterig & purging pills ...	000 10 00
	" 2 vesicatory plaisters for ye eare ...	000 08 00
	" A suppository ...	000 03 00
	" 7 ozs. of a cordiall & antihysterig Julip ...	002 08 00
19	" A Clyster ...	001 16 00
	" A mixture for the Gumes & rooff of ye mouth ...	000 06 00
	" $\frac{1}{2}$ lb. of a Cataplasm for ye sole of ye foott ...	001 10 00
20	12 ozs. of a cordiall & antiscorbutic Julip ...	003 00 00
22	4 suppositories ...	000 12 00
23	1 ounce of ye confiter of sage fflours in a pott ...	000 08 00
		Summa totalis
		194 11 00



Borthwick's final charges to the Lady Marquesse. Details of the account appear in the text below.

caries were the subject of dispute between both physicians and surgeons but, despite efforts to obtain control of their own destiny, the emergence of the druggist-apothecary, fore-runner of the present-day pharmacist, came only when the surgeons obtained a Royal Charter in 1778, at which time the Royal College of Surgeons finally shook off the shackles of the barbers and left the apothecaries to make their own plans. Eight years later, in 1786, the Society of Druggist Apothecaries was formed in Edinburgh. Its original Bond of Association, with signatures, may be seen in the Pharmaceutical Society's house in York Place.

A direct line of descent, therefore, leads from James Borthwick in 1657 to present-day Scottish pharmacy, and Borthwick may be said to have founded organised pharmacy in Edinburgh. His ability and foresight contributed much

My lady Marquesse of Douglass her ldy (i.e., ladyship's)
Accompt to James Borthwick Apoyr. in Edr.

		lb. s. d.
Jany. 23	Imprimis ane accomp. given in all ye summis of ...	194 11 00
24	Item to my lady 2 suppositoires ...	000 06 00
	" a spiced Cupp a glasse of a Cordiall spirit ...	004 04 00
26	" half a pound of a cordiall & anti- scorbutic Julip ...	002 00 00
30	" Ane Embowelling & ane Embaulming wt 3 Charcloaths, pouders, Balsames, lotions, oyles & sweet oyles for the coffin &c ...	266 13 04
		Summa totalis
		467 14 04

Pharmaceutical Manufacturers in the Countries of the COMMON MARKET

SIZE, SCOPE AND BRITISH ASSOCIATES

ACTIVE negotiations between the British Government and the European Economic Community over Britain's application to join that organisation as a full partner have been in progress during the past few months. Although much has been written for and against Britain's joining E.E.C. (the Common Market), little is really known yet about the terms that will have to be met by both sides, for the talks are held in private. So far one agreement has been announced. It refers to manufactured goods from Canada, Australia and New Zealand (see *C. & D.*, June 2, p. 617).

If there is, on the part of Britain, the will to join matched by a desire on the part of the E.E.C. countries to have Britain as a partner, then it is quite possible that the United Kingdom may be in the Common Market by early 1963, or soon afterwards. That would mean slashing the present import tariffs by at least 50 per cent. for a start and reducing the remaining amount each year afterwards until goods are being imported free of duty. Competition from European producers is already being felt in pharmaceutical chemicals, and to a lesser extent in "ethical" products, and that pressure will undoubtedly build up as the time approaches for a decision.

What are the nature and extent of the pharmaceutical industry in each of the countries of the "six"? Below are tabulated some of the more important pharmaceutical manufacturers in each of the Common Market countries. Most of the larger companies already have subsidiaries or agents in the United Kingdom. Others may be expected to seek a link in the near future. An attempt has been made to indicate the size of the company by giving its capital or number of employees. Details have been provided by the companies themselves, except for those in Italy which are abstracted from *Repertorio della Produzione Chemica Italiana*. It is hoped to publish at a later date a similar list of pharmaceutical companies in countries of the European Free Trade Association.

Belgium

A. CHRISTIAENS, S.A., 60 rue de l'Etuve, Brussels, 1
Employees: 500

Products: Digitalis glucosides and extracts of senna
CIBA, S.A., 25 rue Léopold Courouble, Brussels, 3
Employees: 150

Products: Similar to parent Swiss company

LABAZ, division pharmaceutique, Société Belge de l'Azote et des Produits Chim. du Marly, S.A., 1 Avenue De Béjar, Brussels, 12

Description: Research division in Brussels with sales, propaganda and/or manufacturing organisations in all countries of the European Common Market
Capital: F.712,500,000
Employees: 2,600 of which 400 in the pharmaceutical division in Belgium

Products: Coronary vasodilators, haemostatics, non-barbiturate hypnotics, antitussives, bactericidal and fungicidal agents, vitamins, antirheumatics, etc.



LABORATORIA PHARMACEUTICA
Dr. C. JANSSEN N.V., 82
Statiestraat, Turnhout.
Products: Antibiotics, tranquillisers, sedatives, hormones, etc.

LABORATOIRE TRIOSOL, rue Grandi, Maisieres, Hainaut
Employees: 50
Products: Vitamins

LABORATOIRES TUYPENS, S.P.R.L., Avenue du Parc, St.-Nicholas-Waes
Capital: F.120,000,000
Products: Medicinal specialities

LABORATOIRES WOLFS, S.P.R.L., 70 Haantjeslei, Anvers
Employees: 120
Products: Pharmaceutical and veterinary specialities

ETABLISSEMENTS H.V. MEES, 198 avenue de Scheut, Anderlecht, Brussels
Capital: F.8,719,000
Products: Pharmaceutical and veterinary specialities, perfumery

Contact in Britain: Wellcome Foundation, Ltd., Euston Road, London, N.1, of which H. V. Mees is a subsidiary
R.I.T., S.A. (Recherche et Industrie Thérapeutiques), 13 rue du Tilleul, Genval
Capital: F.80,000,000
Products: Antibiotics, vaccines, synthetic chemicals and injection solutions

LOUIS SANDERS, S.A., 47 rue Henri Wefelaerts, Brussels, 6
Employees: 120
Products: Pharmaceutical and veterinary specialities

Capital: F.30,000,000
Employees: 273 including 54 representatives
Products: Pharmaceuticals, cosmetics, etc.

Agencies: International Chemical Co., London; Wyeth International, Ltd., London; E. C. De Witt & Co.; Tam-pax, Havant; Associated Products; Cussons Sons & Co., Ltd.

UNION CHIMIQUE BELGE, PHARMACEUTICAL DIVISION, 68 rue Berkendael, Brussels

Description: The division is one of six operating divisions and plants of Belgium's leading chemical concern
Products: Antihistamines, tranquillisers, synthetic antitussives

S.A. PRODUITS BIOS, Etablissements COUTELIER FRERES, 37 rue de Potter, Brussels, 3
Capital: F.16,500,000
Products: Chemicals and pharmaceuticals

S.A. USINES CODIPHA, 50 rue de la Cible, Brussels, 3
Capital: F.10,000,000
Employees: 120

Products: Pharmaceutical and veterinary specialities
S.A. des USINES DESTREE, 40 rue Delaunoy, Brussels, 8
Capital: F.44,000,000
Products: Pharmaceutical specialities similar to British

parent: Reckitt & Colman, Ltd., Hull

France

A.E.C. SOCIETE DE CHIMIE ORGANIQUE ET BIOLOGIQUE, 24 avenue de l'Opéra, Paris
Capital: NF.10,375,000

Products: Vitamins, amino acids
Contact in Britain: Bourbon Products, Ltd., Piccadilly House, 33 Regent Street, London, S.W.1

FEVRIER, DECOISY, CHAMPION, 60 rue de Wattignies, Paris
Capital: NF.8,036,000

Employees: 800
Products: Galenicals, vitamins, antibiotics, etc.

LABORATOIRES BEYTOUT, 10 rue Guynemer, Saint-Mande, Seine
Capital: NF.800,000
Products: Aminoacids, anti-acids, sulphonamides, histamine, etc.

Contact in Britain: Wilcox Jozeau & Co., Ltd., 74 White Lion Street, London, N.1

LABORATOIRES DELALANDRE, 16 rue Henri Regnault, Courbevoie, Seine
Employees: 450
Products: Medicinal specialties
Contact in Britain: Delandale, Ltd., Rona House, 12 Molyneux Street, London, W.1

LABORATOIRES GREMY-LONGUET, 23 rue Ballu, Paris, 9
Capital: NF.652,500
Products: Hormones, vitamins

LABORATOIRES HOUDÉ, 9 rue Dieu, Paris, 10
Capital: NF.1,500,000
Products: Alkaloids, synthetic chemicals, etc.
British Contact: Continental Laboratories, Ltd., 85 Church Road, Hove, 3.

LABORATOIRES PFIZER-CLIN, 22 rue des Fossés-St. Jacques, Paris
Description: Marketing organisation of Pfizer in France. Goods manufactured by S.I.B., 96 rue de Paris Massy (S.O.) part owned by Pfizer International

LABORATOIRES MIDY, 67 Avenue de Wagram, Paris 17
Capital: NF.3,187,500

Products: Pharmaceutical specialities, antibiotics
Contact in Britain: Wilcox Jozéau & Co., Ltd., 74 White Lion Street, London, N.1

LABORATOIRES MILLOT, S.A., 37 avenue George V, Paris, 8
Capital: NF.1,000,000

Products: Theophylline derivatives

PRODUITS ROCHE, 10 rue Crillon, Paris, 4
Capital: NF.12,600,000
Products: Similar to Swiss parent company and to Roche Products, Ltd., 15

Manchester Square, London, W.1
ROUSSEL-UCLAFF, 35 Boulevard des Invalides, Paris, 7
Capital: NF.97,250,000
Products: Cortisone, hydrocortisone, prednisone, prednisolone, hormones, chloramphenicol, vitamin B₁₂, British Associate: Roussel Laboratories, Ltd., Columbus House, Wembley

LABORATOIRES SANDOZ, 6 Rue de Penthièvre, Paris, 8 (P.O. box 778-08, Paris)
Capital: NF.15,000,000
Products: Similar to Swiss parent and British associate: Sandoz Products, Ltd., 23 Great Castle Street, London, W.1

S.I.F.A. (Societe Industrielle pour la Fabrication des Antibiotiques), 67 boulevard Haussmann, Paris, 8
Capital: NF.17,000,000
Products: Antibiotics, vitamin B₁₂

SOCIETE FRANCAISE D'ORGANO SYNTHESE, 159 Avenue du Roule, Neuilly-sur-Seine, Seine
Capital: NF.2,560,000

Products: Pharmaceutical and industrial chemicals, intermediates, etc.

Contact in Britain: K. W. Chemicals, Ltd., 55 High Holborn, London, W.C.1

SPECIA (Société Parisienne d'Expansion Chimique Spécia)
Capital: NF.1,600,000

Products: About 130 medical and seventy veterinary specialities including antihistamines, neuroleptics, antibiotics, vitamins, sulphonamides, etc.

Description: Company is part of the large Rhone Poulenc group.

Road, Isleworth, Middlesex
Agents (For chemicals): F. W. Berk & Co., Ltd., Berk House, Portman Square, London, W.1; and J. R. Cockton & Co., Ltd., 21 Jockey's Fields, London, W.C.1

FARBEWERKE HOECHST, AG., Frankfurt-on-Main
Capital: DM268,000,000

Products: Wide range of medicinal preparations including antibiotics, hormones, enzymes, vitamins, pharmaceutical and fine chemicals. Biological preparations for human and veterinary use are made by a subsidiary: Behringwerke, AG., Marburg, Lahn, who employ about 1,000.

Contacts in Britain: Hoechst Pharmaceuticals, Ltd., 11 Stoke Poges Lane, Slough, Bucks. (For chemicals): Chas. Zimmermann & Co., Ltd., Dega Works, Walmgate Road, Perivale

KNOLL, AG., Knollstrasse 50, 67 Ludwigshafen-on-Rhine
Products: Pharmaceutical

specialities and chemicals.
British Associate: For pharmaceutical specialities: Knoll, Ltd., Victoria Way, Burgess Hill, Sussex
Contact (for pharmaceutical chemicals): Alwitt, Ltd., 1 Broad Street Place, London, E.C.2

E. MERCK, AG., Frankfurter Str. 250, Darmstadt 61

Products: Laboratory and fine chemicals, reagents, pharmaceuticals, etc.
Contact in Britain: For reagents and laboratory chemicals: Anderman & Co., Ltd., 87 Tooley Street, London, S.E.1

NORDMARK - WERKE, GMBH., Uetersen, Holstein, Hamburg
Employees: 800

Products: Sulphonamides, enzymes, liver extracts, etc.

SCHERING, AG., Müllerstrasse 170, Berlin, N.65
Capital: DM104,000,000

Products: Hormones, sulphonamides
British Associate: Pharmaceuticals (London), Ltd., Victoria Way, Burgess Hill

Holland

VERENIGDE PHARMACEUTISCHE FAB., N.V., Vlijtseweg 130, Apeldoorn

Employees: About 300

Products: Opium alkaloids, pharmaceutical specialities, baby products

N.V. CHEMISCHE FABRIEK NAARDEN, P.O. Box 2, Naarden-Bussum

Capital: Fl.7,055,000

Employees: 826

Products: Fruit flavours, perfume compounds, essential oils, aromatic and pharmaceutical chemicals.

Contact in Britain: Naarden (London), Ltd., 17a Nunhead Green, London, S.E.15

N.V. NEDERLANDSCHE COMBINATIE VOOR CHEMISCHE INDUSTRIE, de Wittenkade 78, Amsterdam

Employees: 1,200

Products: Quinine, quindine, caffeine, theobromine, liver extract, vanillin, etc.

Contact in Britain: R. W. Greeff & Co., Ltd., 31 Gresham Street, London, E.C.2

N. V. ORGANON, Oss

Products: Hormones, steroids, liver extracts, vitamins.

N.V. Organon is the pharmaceutical division of the holding company, N.V. Koninklijke Zwanenberg - Organon, of which the food divisions of Zwanenberg's Fabrieken also form part.

Capital: Fl.121.4 millions (holding company).

Employees: 4,350 (in Holland).

Contact in Britain: Organon Laboratories, Ltd., Brettenham House, Lancaster Place, London, W.C.2

N.V. PHARMACEUTISCHE FABRIEK v/h BROCADOS-STEEMAN & PHARMACIA, Looiersgracht 27, Amsterdam

N.V. PHILIPS-DUPHAR, Apolloalaan 151, Amsterdam
Employees: About 2,000

Products: Pharmaceutical specialities, hormone preparations and glandular extracts; vaccines (human and veterinary), vitamins, biological diagnostic reagents

Contact in Britain: Duphar, Ltd., Berkshire House, High Holborn, London, W.C.1

ROYAL NETHERLANDS FERMENTATION INDUSTRIES, LTD., Mycofarm division, P.O. Box 1, Delft

Employees: 1,035
Products: Antibiotics, enzymes, etc.

PHARMACEUTISCHE FABRIEK ROTER, Arendstraat 3, Hilversum

Employees: 150
Products: Pharmaceutical specialities

Contact in Britain: F.A.I.R. Laboratories, Ltd., 179 Heath Road, Twickenham

Italy

ALBI TERAPEUTICI SOC. P.A.Z., via Stilicino 39, Milan

Capital: Lire 90,000,000

Products: Antibiotics, etc.

ANGIOLINI A. & C. SOC. P.A.Z., via G. Balzaretti 11, Milan

Capital: Lire 450,000,000

ANTIBIOTICI LEPETIT SOC. P.A.Z., via Andrea Vesalio 6, Rome

Capital: Lire 2,000,000,000

Products: Antibiotics, veterinary products, etc.

BERTELLI A. & C. SOCIETA DI PRODOTTI CHIMICO FARMACEUTICI SOC. P.AZ., via Maiocchi 6, Milan
Capital: Lire 911,250,000
Products: Pharmaceutical chemicals, medicinal preparations, cosmetics

BISLERI FELICE & C. SOC. P.AZ., via Savona 16, Milan
Capital: Lire 210,000,000
Products: Galenicals

BOEHRINGER-PRODOTTI CHIMICI PHARMACEUTICI SOC. R. L., via S. Uguccione 5, Milan
Capital: Lire 250,000,000
Products: Pharmaceutical chemicals, medicinal specialties

BRACCO INDUSTRIA CHIMICA SOC. P.AZ., via R. Fucini 2, Milan
Capital: Lire 800,000,000
Products: Pharmaceutical and laboratory chemicals, medicinal preparations

CHINOIN SOC. P.AZ., via G. Zanella 3, Milan
Capital: Lire 100,000,000

Products: Medicinal specialties
Co-Fa-Soc. P.AZ., viale Certosa 126, Milan
Capital: Lire 600,000,000

Founded: 1926
Products: Pharmaceutical specialties, chemical products
CRINOS-INDUSTRIA FARMACOBIOLOGICA, via San G. Cotolengo 31, Milan
Capital: Lire 50,000,000
Products: Hormones, vitamins

ERBA CARLO SOC. P.AZ., via Carlo Imbonati 24, Milan
Capital: Lire 2,000,000,000
Products: Pharmaceutical, medicinal and veterinary specialties

FARMACEUTICI ITALIA, S.A. (FARMITALIA), via F. Turati 18, Milan
Capital: Lire 5,000,000,000
Products: Pharmaceutical chemicals and specialties
Description: Company is part of Montecatini group

GENTILI INSTITUTE, via Maz-

zini 48, Pisa
Capital: Lire 100,000,000
Products: Medicinal specialties

ISTITUTO CHEMIOTERAPICO ITALIANO SOC. P.AZ., via Crocefisso 12, Milan
Capital: Lire 500,500,000
Products: Medicinal specialties, sulphonamides

INSTITUTO DE ANGELI, via Serio 15, Milan
Products: Medicinal and veterinary specialties

ISTITUTO SIEROTERAPICO ITALIANA SOC. P.AZ., via Calzecchi 10, Milan
Products: Vaccines, sera

LA PREALPINA Soc. P.AZ., viale Bianca Maria 4, Milan
Capital: Lire 720,000,000

Products: Vitamin preparations, food supplements, etc.
LEPETIT SOC. P.AZ., via Roberto Lepetit N8, Milan
Capital: Lire 3,000,000,000
Products: Antibiotics, vitamins, tranquillisers, veterinary preparations

PARKE-DAVIS SOC. P.AZ., via Borgonuovo 14, Milan
Capital: Lire 250,000,000
Products: Medicinal preparations similar to American parent

PHILIPS SOC. P.AZ., Sezione Roxane, Piazza IV, Novembre 3, Milan
Capital: Lire 3,000,000,000

Products: Vitamins, pharmaceutical preparations, insulin

PIERREL SOC. P.AZ., via Gradiosa 6, Milan
Capital: Lire 500,000,000

Products: Pharmaceutical specialities

RECORDATI-LABORATORIO FARMACOLOGICO SOC. P.AZ., via Matteo Civitali 1, Milan
Capital: Lire 300,000,000

Products: Medicinal specialties, pharmaceutical chemicals, etc.

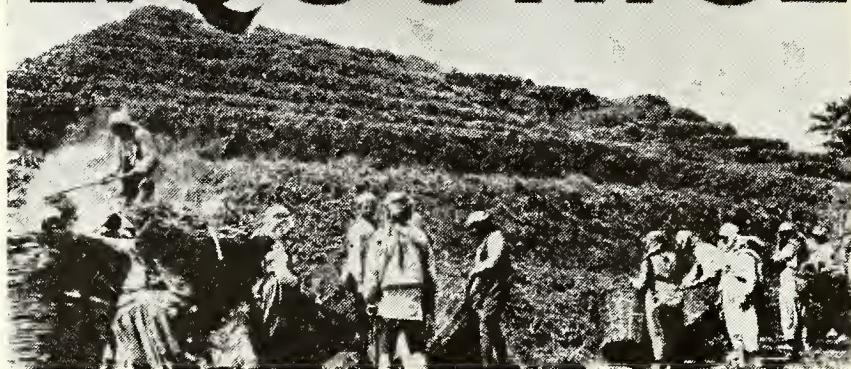
SQUIBB SOC. P.AZ., via Salaria 716 Rome

Products: Antibiotics, medicinal and veterinary specialties

PHARMACOLOGICAL PROPERTIES OF LIQUORICE

Renewed interest in a botanical with a long record of use

DR. C. NIEMAN
(Director, Central Institute for Liquorice Processing Industries, Amsterdam)

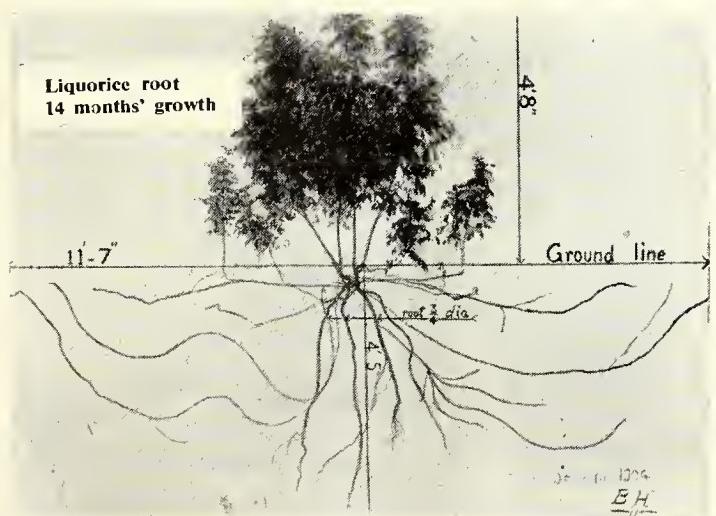


DURING the past decade or so, studies of the pharmacology and physiology of liquorice have been substantial, and it is now widely accepted that liquorice extract may be given successfully in the treatment of peptic ulcer and Addison's disease, while one of its constituents (glycyrrhetic acid) is used for its anti-inflammatory properties in dermatology.

During the 1939-45 war Revers, a Dutch physician, discovered and investigated the effect of liquorice extract in controlling gastric and duodenal ulcers. He had noticed that patients suffering from peptic ulcer often markedly improved when using a certain preparation made by a local pharmacist in the small Dutch community of Heerenveen. This preparation was a paste containing approximately 40 per cent. of powdered liquorice extract. Using his own extract made up with water to a paste, Revers successfully treated a series of patients with peptic ulcer by daily administration of the equivalent of approximately 7 gm. of liquorice juice, but he also observed the serious side effect that about 20 per cent. of his patients developed oedema, mainly in the face and in the extremities. Those symptoms promptly disappeared when the treatment was discontinued.

Following up those observations Molhuysen and Revers in 1951 were able to identify glycyrrhizin, a main constituent of commercial liquorice juice, as the cause of the oedema. Those findings finally resulted in the discovery of a hormone-like action of glycyrrhetic acid, of which more will be said later.

The curative effect of liquorice extract on peptic ulcer in human patients and the concomitant appearance of oedema were confirmed by numerous investigators (Schulze and Franke in 1951, Lange, Argelander, Hennemann, and others in 1952, Schwendy, Friedrich and Takacs in 1954 and Hensel in 1955). All had used daily doses of 30-40 gm. or even 50 gm. of extract. The side effects induced by those amounts



ROOT SYSTEM: Diagram of a liquorice plant showing the root system.
(Courtesy: Houseman)



COLLECTION AND TRANSPORT: Left, Russian Tartar carrying his collection of liquorice root to the collecting centre and right: transporting the baled root ready for shipment.

[Courtesy: Houseman and MacAndrews and Forbes]

could be eliminated, however, by prescribing a salt-free or salt-low diet (up to 5 gm. of sodium chloride per day) as was shown by Franke and Wilde in 1952, Schulze, Curth and others in 1954. According to Klimpel and Finkenauer in 1952, oedema still occurred after a daily dose of 40 gm. of liquorice juice, even when the salt intake of the patient was restricted. On the other hand, Müller in 1953 found no oedema when the daily dose was only 10 gm. of the extract, with no salt restriction.

In view of the early results of Revers who had observed oedema with a daily dosage as low as 7 gm. of liquorice juice, there would appear to have been wide variation in the glycyrrhizin content of commercial samples used. That was supported by the results of numerous glycyrrhizin determinations carried out in the author's laboratory, on liquorice extracts. It would appear that most of the German workers used sticks of Italian origin, in which the content of glycyrrhizin was comparatively low.

There has been a difference of opinion on the identity of the antipeptic factor or factors present in liquorice. According to most Dutch workers, the curative principle is not related to the glycyrrhizin content but to the presence of an, as yet, unidentified antispasmodic factor in the extract. The opinion that glycyrrhizic acid is inactive as an ulcer-healing factor dates back to Revers who in 1952 and 1954 when treating stomach-ulcer patients with an extract from which the glycyrrhizin had been allegedly eliminated, found no response; he suggested that patients with peptic ulcer should be treated with glycyrrhizin-free liquorice extract to avoid side effects. Some German investigators however, claim that glycyrrhizic acid is the factor, a view supported by Schulze and Franke, Jantsch and others in 1952.

Antispasmodic Action

An antispasmodic activity of liquorice extract was originally demonstrated by the Dutch workers Nelemans and Stamperius in 1950. Those investigators determined an antispasmodic effect of liquorice juice towards compounds that induce spasms in the isolated intestine of experimental animals, whereas liquorice extract alone appeared to decrease both motility and tonus. In view of a close connection between gastric spasms and peptic ulcer, it was suggested that the beneficial effect of liquorice extract in peptic ulcer might be due to the presence of one or more antispasmodic components. The problem was investigated in 1955 by Berger and Höller who demonstrated that several samples exerted antispasmodic influence on the isolated animal intestine, while the activity varied markedly in different samples. The antispasmodic activity was not correlated with the contents of glycyrrhizic acid in the various samples of juice. In later experiments the same workers shifted attention to another

glycosidic component of the extract, liquiritin or 7-hydroxy-4'-glucosidoxy-flavanone, a true glucoside with liquiritigenin (4',7-dihydroxy flavanone) as the aglycon. They demonstrated that liquiritigenin had antispasmodic properties. Though they thought it was too early for definite conclusions, recent developments suggest that the glycoside liquiritin, and possibly other flavonoids present in extract, are responsible for the antispasmodic properties. Possibly also the flavonoids are actively concerned in the ulcer-healing properties.

Hormone-like Properties

The presence of an oestrogenic substance in liquorice extract was demonstrated by Costello and Lynn in 1950. The oestrogenic activity of the juice was also studied by Aho in 1953 but he did not succeed in confirming the results. The oestrogenic activity, as such, does not appear to have been seriously considered as responsible for or related to the ulcer healing qualities of liquorice juice. Further study of natural oestrogenic substances suggests that in liquorice extract the oestrogenic activity may be due to liquiritigenin.

A second hormonal influence of liquorice extract, similar to that of the steroid hormone deoxycorticosterone (DOC), has been demonstrated following Dutch investigations on the ulcer-healing properties and the accompanying side effects of the juice. In fact, the hormone-like action of the extract has been much more clearly defined than the antipeptic effects, and the identity of the hormonal factor has been established beyond doubt. Both Molhuysen and others in 1950 and Revers in 1951 found that the side effects observed during treatment of ulcer patients with liquorice extract (oedema of the face and limbs), were caused by the glycyrrhizic acid present. Having observed those effects with a daily dosage of 6 gm. of liquorice extract, Revers in 1951, succeeded in duplicating the symptoms by administering 2 gm. of ammonium glycyrrhizinate per day.

Effect on Potassium Levels

In a fine series of clinical experiments, Borst and his collaborators in the Binnengasthuis hospital at Amsterdam showed that the extract increased the contents of sodium, chloride and water of the body, whereas the potassium level was decreased. The effect was similar to that of deoxycorticosterone. Groen in 1951 at the Wilhelmina hospital, Amsterdam, obtained a dramatic effect by keeping patients with Addison's disease in electrolyte equilibrium over long periods of time by the sole administration of liquorice extract. Addisonian disease is caused by a primary adrenal insufficiency, and the standard treatment is to administer synthetic deoxycorticosterone acetate (DOCA). In further experiments the Amsterdam workers confirmed the identity of the active principle in liquorice by successfully maintain-

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GREAT MOMENTS IN MEDICINE

*Greek physician to the Roman court, GALEN (130-200 A.D) applies cupping,
a form of treatment which he advocated.*

From mystical potions to modern pharmaceuticals . . . today's
research into medical problems has
cut the death rate, relieved suffering and lengthened life.

PARKE-DAVIS

ing electrolyte balances through the daily oral administration of dosages of 3-4 gm. of ammonium glycyrrhizinate.

Glycyrrhetic Acid in Dermatology

Glycyrrhetic acid (the name glycyrrhetic acid used by many authors is not consistent with the original German nomenclature) is the pentacyclic triterpenic aglycone of glycyrrhizic acid. It has been tested by numerous British investigators in recent years for its anti-inflammatory properties, upon which is based its use in dermatological ointments. The first favourable report was from Adamson and Tillman in 1955. Colin-Jones in 1956 suggested that suitable preparations of the pure acid would be as valuable as hydrocortisone in skin treatment, but Warin and Evans in 1956 comparing glycyrrhetic acid ointments with hydrocortisone in several types of eczema, reported negative results. Other investigators, such as Bettley, Russell and Donaldson and Duthie all in 1956 failed to find any significant positive action of glycyrrhetic acid but about that time American workers demonstrated synergistic effects of mono-ammonium glycyrrhizinate and hydrocortisone in the adrenalectomised patient.

Further notes in 1956 by Colin-Jones and Evans on the results with glycyrrhetic acid in dermatology were encouraging, but negative reports, too, continued to appear from, for example, McCallum, Hall and Jefferson, Smeed and Tomlinson in 1956, Scott 1957, and Jorgensen in 1958.

In the years that followed, however, favourable reports began to appear. Halpin successfully treated skin disorders in animals, and similar results were reported in 1957 by Phillips, by Davies and Fairweather, by Jackson and Jackson and by Hebler, and in 1958 by Phillips and Somers. Even with an ointment containing crude liquorice powder, Loewy in 1956 observed good results in subacute and chronic eczema. Ointments containing glycyrrhetic acid received further support from Annan, Colin-Jones, Chakravorti, Charpy and others, Colin-Jones and Somers, D'Arcy and Kellett, Odegaard, Pozzo, Sommerville, Somers, Zanchi and Spagnoli, also in 1958 by Evans, Finney and Somers, Fry and Goldman and Lipman Cohen.

A Thirst Quencher

In the earliest medical records the value of liquorice as a thirst quenching substance was recorded. In his "De Historia Plantarum" (300 B.C.) Theophrast, pupil of Aristotle and "father of botany," recalled that the Scythians, living on liquorice and mare's-milk cheese were capable of going for eleven to twelve days without drinking. Galen (130-210 A.D.) notes that liquorice is the only sweet substance that tends to abate thirst! Quincy, in his "Pharmacopeia Officinalis et Extemporanea" (London, 1719) calls liquorice a "slacker of thirst" and Stille in his "Therapeutics and Materia Medica" (Philadelphia, 1868) recommends an infusion of the liquorice root in febrile affections attended with much thirst. The use of crude ammoniated glycyrrhizin in French military hospitals and in the army has been (and perhaps still is) popular.

Commercial Note on the Root

Liquorice root is one of the few botanicals for which there is still an active demand. Like many other commodities used for making galenicals it has suffered some setback with the coming of chemotherapy, but the discovery of its active constituents and their applications in medicine, as mentioned above, has prevented it from slipping into the category of a "has-been." Indeed, one British manufacturer recently opened new laboratories so that further research into glycyrrhetic acid and other constituents of the natural material may be continued.

The root or its extract has important uses outside of medicine and confectionery. For instance, it is understood that 90 per cent. of the liquorice taken up by industry in the United States is used in tobacco blending. Other applications that have been mentioned include its use as (a) a

flotation agent for separating ore from waste; (b) a fire-fighting foam; (c) a rubber latex stabiliser. The expressed root is used in making structural insulating boards.

On the London market the Russian root is in most frequent demand. At present it commands a premium of about 10s. per cwt. over the Anatolian. Supplies of both varieties are from time to time difficult to get, but Persian—the cheapest of the three—is normally more freely available. The illustrations show the collection and transport of Turkish liquorice root to the ports.

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TRADE REPORT

The prices given are those obtained by importers or manufacturers for bulk quantities or original packages. Various charges have to be added whereby values are in many instances augmented before wholesale dealers receive the goods into stock. Crude drugs and essential oils vary greatly in quality and higher prices are charged for selected qualities.

LONDON, JUNE 27: Trading in all sectors of the market remained at a low level during the week. Jamaican GINGER prices advanced a further 25s. per cwt. on the spot following a 20s. rise at origin; Cochin material was reduced by 10s. ALOES for shipment showed an easier trend. Brazilian and Formosan MENTHOL were lower both for immediate and forward deliveries. Also lower among CRUDE DRUGS were QUILLAIA (down 15s. cwt.) and TRAGACANTH (down 50s. cwt.). Some AROMATIC SEEDS and PEPPERS were inclined to firm although there was no report of business at the higher levels. The Board of Trade is considering an application for the removal of the import duty on dried citrus peels.

In ESSENTIAL OILS, quotations for LEMONGRASS continued to ease, the fall being 1s. 9d. per lb. on the week but Formosan CITRONELLA was firmer by a few pence. In line with weaker menthol prices Chinese and Brazilian PEPPERMINT were lower.

PHARMACEUTICAL CHEMICALS were unchanged with the exception of MAGNESIUM SULPHATE which was quoted 1s. 3d. per cwt. dearer for 1-ton lots in the case of the dried B.P. material and by a corresponding amount for crystals.

Pharmaceutical Chemicals

DIGOXIN.—100-gm. lots, 78s. per gm.

LACTOSE.—B.P. in 1-ton lots packed in 1-cwt. paper-lined sacks, £129 10s. per ton, delivered in the United Kingdom.

LEAD ACETATE.—B.P. crystals, 225s. per cwt.

MAGNESIUM CARBONATE.—Per cwt. LIGHT, 129s. or 121s. for 1-ton lots; HEAVY, 175s. for 1-cwt. lots; from 130s. to 135s. for 1-ton lots.

MAGNESIUM CHLORIDE.—One-cwt. 1s. 10d. per lb., 5-cwt., 1s. 7d.

MAGNESIUM DIHYDROGEN PHOSPHATE.—One-cwt. drums, 4s. per lb.

MAGNESIUM HYDROXIDE.—B.P.C., 1-cwt. lots, 3s. 7d. per lb.; 1-ton, 3s. 2d. per lb.

MAGNESIUM OXIDE, B.P.—LIGHT, 1-cwt. lots, 3s. 2d. per lb.; HEAVY, 5s. 10d. per lb.

MAGNESIUM PEROXIDE.—B.P.C. (15 per cent.), 3s. 11d. per lb. (1-cwt.).

MAGNESIUM SULPHATE.—B.P. in minimum 1-ton lots varies between £19 5s. and £25 per ton according to size of crystal and manufacturer. Exsiccated, £53 5s. per ton.

MAGNESIUM TRISILICATE.—(Per lb.). In 28-lb. packages:—28-lb., 4s. 9½d.; 1-cwt. 3s. 10d.; 5-cwt., 3s. 7d.; 1-ton, 3s. 1d.

SALOL.—B.P.C., 9s. per lb. (1-cwt. lots).

SALICYLIC ACID.—One-cwt., 3s. 4½d. per lb.; 5-cwt., 3s. 2½d. per lb.

SANTONIN.—5-kilo lots, 360s. per kilo.

SODIUM PANTOTHENATE.—£6 10s. per kilo.

STREPTOMYCIN.—BASE or SULPHATE, 9d. per gm. Same prices for DIHYDRO.

SULPHOCARBOLATES.—SODIUM PHENOSULPHONATE, B.P.C., 1949 (powder), 12s. 10d. per kilo in 50-kilo lots and crystals, 12s. 2d. per kilo. ZINC, B.P.C., 1949 is quoted at the same rate.

SULPHUR.—SUBLIMED FLOWERS, B.P., £50 ton; COMMERCIAL, £45; POWDER, £19 to £24; PRECIPITATED, B.P., £110; ROLL, £24 10s. All ex store.

TANNIN ACID.—The B.P. levis, ex ether, 9s. per lb.; B.P. powder, 8s. 6d. (5-cwt. lots).

TARTARIC ACID.—(In kegs): 1-ton lots, 283s. per cwt.; 10-19 cwt., 286s.; 5-9 cwt., 289s.; 1-4 cwt., 292s. Bags 8s. cwt. less. Crystals 7s. per cwt. more than powder and granular.

TEREBENE.—B.P.C., one-carboy lots, 4s. 5d. per lb.

TERPIN HYDRATE.—Less than 12½ kilos, 11s. 6d. per kilo.

Crude Drugs

AGAR.—Kobé No. 1, 12s. per lb. in bond; shipment, 11s. 3d., c.i.f.

ANISE.—Chinese STAR 180s. per cwt., spot, duty paid; shipment, 160s., c.i.f.

BALSAMS.—Per lb.: CANADA: Spot, 20s. 6d. to 25s. COPAIBA: B.P.C. grade, 11s. on spot. PERU: Spot, 8s. 6d., duty paid. TOLU: B.P., from 12s. to 17s. 6d. as to analysis.

BUCHU.—Spot, 4s. per lb.; June-July shipment, 3s. 10d., c.i.f.

CASCARA.—Spot, 250s. per cwt.; new crop for June-July shipment, 207s. 6d., c.i.f.

COCHINEAL.—Black-brilliant, 8s. to 8s. 6d. per lb.; silver-grey, 6s. 6d. nominal.

COCILLANA.—Bark, 2s. per lb. on the spot.

COLOCYNTH PULP.—Spot, 2s. per lb.

ELEMI.—Spot, 1s. 9½d. per lb. Shipment, 1s. 5d., c.i.f.

ERGOT.—Spot, East European, 6s. 9d. per lb.; Portuguese, 8s. 6d.; shipment, 7s. 9d., c.i.f.

FRANGULA.—Spot, 87s. 6d. per cwt.

GENTIAN.—Spot, French, 150s. per cwt.

GINGER.—(Per cwt.). African spot nominal; shipment, 420s. per cwt., c.i.f. Jamaican No. 3, spot, 585s.; shipment, 520s. Cochin, spot, 215s.; shipment, 205s., c.i.f.

ORANGE PEEL.—Spot: Sweet ribbon 1s. 10d. per lb.; bitter quarters: West Indian, 11½d.; Spanish, 1s.; bitter ribbon 1s. 3d.

PEPPER.—White Sarawak spot, 3s. 2½d. per lb.; June shipment, 3s. 1½d., c.i.f. Black Sarawak spot, 2s. 8½d.; shipment, 2s. 5½d., c.i.f. Black Malabar, 310s. per cwt. spot nominal; shipment, 292s. 6d., c.i.f.

QUILLAIA.—Spot 185s. per cwt. Shipment no offers.

SEEDS.—(Per cwt.). ANISE—Cyprian, 290s.; Syrian, 275s., in bond. CARAWAY.—Dutch, 160s., duty paid. CELERY.—Indian, 225s.; new crop for June-July, 177s., c.i.f. CORIANDER—Moroccan, 85s., duty paid; Indian bold, 67s. 6d. Shipment, new crop Moroccan, 42s. 6d., c.i.f.

CUMIN.—Iranian, 140s., Cyprian, 165s., duty paid; shipment: Cyprian 160s., c.i.f.; Iranian, 126s., c.i.f. DILL—Indian, 95s.; shipment, 65s., c.i.f. FENNEL.—Indian 115s.; shipment, 98s., c.i.f. FENUGREEK.—Moroccan, 85s., duty paid; new crop for June-July shipment, 45s., c.i.f. MUSTARD.—English, 65s. to 80s., according to quality.

SHELLAC.—F.O.T.N., 190s. per cwt.; No. 1, 205s.; F.O., 220s. to 270s., spot.

SQUILL.—White 77s. 6d. to 85s. per cwt. as to holder.

TRAGACANTH.—No. 1 ribbon, £132 10s. to £135 per cwt. No. 2, £125 to £127 10s.

TURMERIC.—Madras finger quoted at 157s. 6d. per cwt. spot; July-August, 140s., c.i.f.

WAXES.—(Per cwt.). BEES.—Dar-es-Salam, spot, 430s.; shipment, 420s., c.i.f. Abyssinian, spot cleared; shipment, 375s., c.i.f. Sudanese, spot, 420s.; shipment, 372s. 6d., c.i.f. CANDELILLA, spot, 465s.; CARNAUBA, fatty grey, spot, 390s.; shipment, 360s., c.i.f.; prime yellow, spot, 630s.; shipment, 600s., c.i.f.

Essential and Expressed Oils

ALMOND.—Imported B.P., 4s. 11d. to 5s 3d. per lb., duty paid as to quantity.

AMBER.—Rectified on the spot, 1s. 6d. per lb.

ANISE.—Chinese, 19s. 3d. per lb., spot; shipment, 18s. 9d., c.i.f.

ARACHIS.—Spot, 2-5 ton lots naked ex mill, £128 per ton.

BAY.—West Indian short on the spot, prices nominal.

BERGAMOT.—Spot, from 71s. per lb.

BIRCH TAR.—Rectified, 8s. per lb.

BOIS DE ROSE.—Brazilian, 28s. 6d. per lb. nominal, on the spot; shipment, 29s., c.i.f.

CAMPHOR, WHITE.—Chinese, 2s. 3d., duty paid, per lb.; shipment not offering.

CASTOR.—Home produced B.P. oil, spot, £150 per ton naked ex mill (2-ton lots).

CITRONELLA.—Ceylon, spot, 6s. 10d.; shipment, 6s. 9d. per lb., c.i.f. Formosan, 9s. 3d. in bond: afloat, 9s. 1½d., c.i.f.; July shipment, 8s. 7½d., c.i.f.; Chinese, 8s. 4d., c.i.f.; spot 9s. in bond.

EUCALYPTUS.—B.P., 3s. 9d. to 4s. 9d. per lb. on spot.

LEMONGRASS.—Spot, 19s. 3d.; June shipment, 18s. per lb., c.i.f.; July, 17s. 6d., c.i.f.

PENNYROYAL.—Spot is 20s. per lb., duty paid.

PEPPERMINT.—*Arvensis*: Chinese spot, 25s.; shipment, 22s., c.i.f. Brazilian spot, 10s. 6d.; shipment, June-July, 9s. 6d., c.i.f. *Piperita*: Italian, 48s. per lb., spot. American from 26s. to 28s. per lb. as to make.

PETITGRAIN.—Paraguay, 18s. 6d. per lb., spot; shipment, 17s. 6d., c.i.f.

PIMENTO.—English-distilled berry from 135s. per lb.; imported, 32s. 6d. Rectified leaf, 19s. 6d. per lb.

PINE.—*Pumiliois* 32s. per lb.; *sylvestris*, 9s., *abietis*, 15s.

ROSEMARY.—Spanish is 9s. 3d. per lb. on the spot for best quality.

RUE.—Spanish is 23s. 6d. per lb. spot.

SAGE.—Spanish 8s. 6d. per lb., Dalmatian, 23s.

SANDALWOOD.—Spot Mysore, 145s. per lb.; forward, East Indian, 137s., c.i.f.

UNITED STATES REPORT

NEW YORK, JUNE 26: More competition from imports brought a cut in TARTARIC ACID, NF grade, to 36½ cents per lb., down 4½ cents. MENTHOL prices went lower to make the Brazilian \$4.85 per lb., down five cents, and the Japanese \$8.25, down 25 cents. Prices for PERU BALSAM sagged to \$1 a lb., down 15 cents. Bourbon GERANIUM was lower at \$17.25, down 75 cents. PEPPERMINT firmed up with the natural \$4.50 per lb., up 50 cents. The market for Mexican ANISE, Ceylon CINNAMON and Iranian CUMIN appeared firmer in tone while such items as CORIANDER, Jamaica GINGER and NUTMEG were termed softer.

WORLD TRADE

E.F.T.A. Tariff Cuts.—The next reduction of 10 per cent. in tariffs between the countries in the European Free Trade Association, due under the Stockholm Convention to take place on January 1, 1965, is to be implemented on October 31. The acceleration means that the tariffs between E.F.T.A. countries will come down to 50 per cent. of the initial tariffs as applied by the Common Market from July 1. Austria and Norway are allowed a few extra months to apply their cuts.

United States Chemical Tariffs.—United States imports of organic chemicals may increase five-fold if the Kennedy Administration plan for tariff-cutting authority becomes law, according to Arthur D. Little, Inc., a Cambridge, Mass., research firm. The research firm recently released a report commissioned by the Synthetic Organic Chemical Manufacturers Association on the proposed tariff law changes as they would affect organic chemicals. The bill would empower the President to negotiate with the European Common Market for complete elimination of tariffs on many items including organic chemicals, while reducing other United States tariffs by as much as 50 per cent. The report concluded that with no tariff on organic chemicals, imports would rise from the present 2 per cent. of total United States sales to about 10 per cent.

PRINT AND PUBLICITY

PUBLICATIONS

Catalogues

- DISTILLERS CO., LTD., 20 St. James's Square, London, S.W.1: Industrial films from DCL.
- JACKEL & CO., LTD., Shuna Place, Maryhill, Glasgow, N.W.: Annual catalogue.
- JAPANESE CAMERAS, LTD., 50 Piccadilly, Tunstall, Stoke-on-Trent, Staffs: Photographic catalogue 1962. Pp. 48. For counter sale, price 9d. Dealer's name and address may be overprinted on cover.
- KODAK, LTD., Kingsway, London, W.C.2: Kodak dealer catalogue 1962. Pp. 140.
- LEDERLE LABORATORIES DIVISION, CYANAMID OF GT. BRITAIN, LTD., Bush House, Aldwych, London, W.C.2: Loose-leaf supplements to list of pharmaceutical products.
- MAY & BAKER, LTD., Dagenham, Essex: M & B counter lines, Pp. 8.
- NEVILL LONG & CO. (BOARDS), LTD., North Hyde Wharf, Southall, Middlesex: List of building boards, Pp. 16.



SHOWCARDS: Available from Glaxo Laboratories, Ltd., Greenford, Middlesex, are the showcards here illustrated for the company's products

COMMERCIAL TELEVISION

Figures in the columns represent number of appearances of the product during the week.

	London	Midland	North	Scotland	Wales	South	N.E.	Anglia	Ulster	Westward	Border	Grampian	Eireann
Airwick .. .	5	—	—	—	—	—	—	—	—	—	—	—	—
Alka Seltzer .. .	3	—	5	4	3	4	3	2	4	2	1	3	—
Anadin .. .	4	5	6	5	5	1	4	1	1	2	4	—	—
Andrews liver salt .. .	3	3	4	5	7	3	3	6	3	10	5	3	—
Anne French cleansing milk .. .	1	—	1	1	—	—	—	—	—	—	—	—	—
Arrid .. .	1	—	—	—	—	—	—	—	—	—	—	—	—
Askit powders .. .	—	—	—	—	14	—	—	—	—	—	7	—	—
Biskoids .. .	1	2	1	1	—	—	—	—	—	—	—	—	—
Bisodol .. .	—	5	4	—	—	—	—	—	—	—	—	—	—
Carter's little liver pills .. .	1	1	—	3	4	—	3	—	—	—	—	—	—
Chandau hair spray and lacquer .. .	—	1	1	—	—	—	—	—	—	—	—	—	—
Cooper's aerosols .. .	3	2	4	8	3	3	3	4	4	3	4	4	—
Cuticura .. .	2	2	1	—	—	—	—	—	—	—	—	—	—
Delrosa .. .	2	—	—	—	—	—	—	—	—	—	—	—	—
Delsey .. .	1	1	2	2	5	3	1	2	5	4	4	4	—
Eno's "fruit salt" .. .	3	3	2	4	3	4	—	3	3	—	—	—	—
Euthymol tooth-paste .. .	—	—	—	—	—	—	—	—	2	2	2	2	—
Flit aerosols .. .	1	1	1	1	1	1	1	1	—	—	—	—	—
Freezone .. .	—	2	3	—	—	—	3	—	—	—	—	—	—
Gillette .. .	3	3	3	3	3	3	3	3	3	3	3	3	—
Goddard's cream and embrocation .. .	1	—	—	—	—	2	—	—	—	—	—	—	—
Hedex .. .	—	—	—	—	—	—	—	—	—	—	—	—	—
Ilford photographic products .. .	4	5	5	5	4	6	6	8	6	6	6	6	—
Immac .. .	2	2	2	1	4	2	—	3	1	1	—	1	—
Izal .. .	4	4	4	5	5	4	3	5	5	4	4	6	—
Kleenex .. .	2	1	2	2	2	1	2	3	3	2	3	3	—
Loxene hair cream .. .	2	2	2	2	3	2	2	2	3	3	3	3	—
shampoo .. .	—	1	1	—	2	—	—	—	—	—	—	—	—
Margo's hair lacquers .. .	—	—	—	—	—	—	—	—	9	—	—	—	—
Milk of Magnesia tablets .. .	2	3	4	3	4	5	3	7	6	3	6	8	—
Moorland tablets .. .	2	1	2	4	3	2	3	3	3	—	—	—	—
Nair .. .	—	—	—	—	—	3	—	—	—	—	—	—	—
Nulis .. .	—	—	—	—	—	1	2	3	3	3	4	3	—
Radox .. .	3	3	—	—	4	—	3	—	—	—	—	—	—
Rinstead pastilles .. .	—	—	—	—	—	—	—	—	1	1	—	—	—
Robinson's baby rice .. .	5	5	—	5	—	—	—	—	—	—	5	—	—
Roll Quick .. .	—	—	—	—	3	—	—	—	—	—	—	—	—
Salvelox .. .	—	5	—	2	—	—	—	—	1	—	—	—	—
Sek .. .	1	1	1	—	—	—	—	—	—	—	—	—	—
T.C.P. .. .	1	1	1	—	1	4	1	3	—	1	—	—	—
Veet 'O' .. .	—	—	—	—	—	—	—	1	—	—	—	—	—
Zal .. .	4	4	4	4	2	2	2	2	3	2	2	3	—

THE PULLIN OPTICAL CO., LTD., Ellis House, Aintree Road, Perivale, Middlesex: Photographic catalogue 1962/63, Pp. 64.

Booklets and Leaflets

- JOHNSONS OF HENDON, LTD., Hendon Way, London, N.W.4: "Reversal processing of black-and white negative material." 2-p. information sheet (No. 110/C).
- ROTUNDA, LTD., Denton, Manchester: "Pressure sensitive adhesive tapes for protecting, sealing, packaging, jointing." 8-p. pamphlet.
- TRUFOOD, LTD., 113 Newington Causeway, London, S.E.1: "From spoonfeeding to family meals." 32-p. booklet for counter distribution.

DISPLAY MATERIAL

- TORBET LACTIC OAT CO., LTD., 24 Great King Street, Edinburgh, 3: Showcards and dispensers for Torbet lactic oats.
- JACKEL & CO., LTD., Shuna Place, Maryhill, Glasgow, N.W.: Counter stand supplied with order for four dozen Royal Sweden brushes.
- COUNTY LABORATORIES, LTD., Beecham House West, Great West Road, Brentford, Middlesex: Two-tier gilt metal display stand for Body Mist; Scatter basket in yellow, blue and pink for bottles of Silvikrin "improved formula" shampoo.



SEASONAL PROMOTION: Backed by summer advertising in photographic magazines and a price reduction effective from May 1, Titania transparency holders are being marketed in cartons of twelve and twenty by Pullin Optical Co., Ltd., Ellis House, Aintree Road, Perivale, Greenford, Middlesex.

COMING EVENTS

Items for inclusion under this heading should be sent in time to reach the Editor not later than first post on Wednesday of the week of insertion.

Monday, July 2

POST-GRADUATE MEDICAL SCHOOL OF LONDON, 150 Du Cane Road, London, W.12, at 4 p.m. Dr. R. Bodley Scott on "Chronic Myeloid Leukemia."

SECOND INTERNATIONAL CONGRESS OF COSMETIC SCIENCE, school of pharmacy, University of London, Brunswick Square, London, W.C.1. (Until July 6.)

Wednesday, July 4

POST-GRADUATE MEDICAL SCHOOL OF LONDON, 150 Du Cane Road, London, W.12, at 2 p.m. Dr. R. R. Race on "An X-linked Blood Group and Some of its Applications."

Thursday, July 5

DONCASTER BRANCH, PHARMACEUTICAL SOCIETY, Ivanhoe hotel, Sprotborough, at 7.30 p.m. Car treasure hunt.

NOTTINGHAM BRANCH, NATIONAL ASSOCIATION OF WOMEN PHARMACISTS. Visit to Nottinghamshire County Police headquarters, Epperstone, at 7.30 p.m.

Advance Information

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, Manchester, Annual meeting, August 29 to September 5.

MISCELLANEOUS INQUIRIES

Illegal in Britain

Can you tell me anything about the use of chloralose in controlling over-population of pigeons?

CHLORALOSE (glucochloral) is an active hypnotic used widely in France to stupefy pigeons. The bird's neck is wrung before it recovers from the effects of the drug. It is necessary to point out that the use of chloralose for that purpose is illegal in Britain. It is an offence "to put or place upon any land or building any poison, or any fluid, or edible matter (not being sown seed or grain) which has been rendered poisonous." [There are specific exemptions, e.g., for rat poisons.]

Lawns Without Daisies

A customer asks what he can do to his lawn to make it as free of daisies and plantains as that of his next-door neighbour, whose soil is presumably similar.

EXPERIMENTS have shown that, if the soil of lawns is made distinctly acid by heavy and successive dressings with ammonium sulphate then earthworms, clover, daisies and plantains disappear. The area should be given a dressing of ammonium sulphate in twice its volume of sand at fortnightly intervals and at the rate of 5 lb. per 1,000 sq. ft. ($\frac{1}{4}$ oz. of ammonium sulphate per sq. yd.). That is spread evenly and washed into the soil. There is apparently no risk of damage unless watering is neglected. The treatment should also kill the moss, as moss will not live where the soil is slightly acid.

Carmine on a Cotton Frock

A lady customer is in great distress from having stained with carmine a white cotton frock. Can you offer any hope?

NOT very much, unfortunately. To remove all trace of the carmine is difficult. Carmine is, however, readily soluble in ammonia, and you might carry out a test on a similar piece of material stained with the carmine solution and using a 10 per cent. solution of ammonia. When removing stains of any kind it is preferable to place a thick layer of blotting paper under the material to absorb the stain as it is extracted. The removal of stains is, of course, really a skilled task and before lending your services it would be as well to insist that the work is being undertaken at the customer's own risk.

To Add at the Last Minute

One of my customers is prescribed a mixture one of the ingredients of which is syrup of raspberry. She complains that it ferments, despite the fact that it contains preservatives. Is there any way of dealing with the problem?

TESTS confirm that the mixture, made according to the formula supplied, does ferment on keeping, especially in warm weather, despite the fact that it contains both chloroform water and solution of benzoic acid. It seems almost certain that the reaction is a fermentation of the sucrose in the syrup of raspberry. It is possible that the preservative action of the chloroform and benzoic acid is inhibited by the sulphadimidine present. The most practical way out of the difficulty would be to prepare the mixture without the syrup of raspberry and for that to be added when the patient's mixture is prepared for administration.

TRADE MARKS

APPLICATIONS ADVERTISED BEFORE REGISTRATION

From the "Trade Marks Journal," June 13

- For vaccines used for providing active immunisation, solely for human use (5) DIPIEVAX, 826,819, by Wellcome Foundation, Ltd., London, N.W.1.
- For pharmaceutical preparations and substances for use in the treatment of rheumatism (5) VER-O-RHEUM, 826,824, by Heath & Heather, Ltd., St. Albans, Herts.
- For pharmaceutical preparations and substances, being sulphonates (5) THIOSPORIN, 828,465, by Wellcome Foundation, Ltd., London, N.W.1.
- For deodorants for personal use (5) SWEET-TEEN, 828,477, by Teenaid Pty., Ltd., Waverley, New South Wales, Australia.
- For preparations for destroying vermin (5) RODEXITE, 828,557, by Gibbs Farms, Ltd., Norwich, Norfolk.
- For vitamin preparations (5) AQUADEX, 829,308, by Crookes Laboratories, Ltd., London, N.W.10.
- For pharmaceutical preparations for children (5) PAEDO-SED, 829,318, by Fletcher, Fletcher & Co., Ltd., London, N.7.
- For pharmaceutical preparations and substances for human and veterinary use (5) ANACYCLIN, 829,600, by CIBA, Ltd., Basle, Switzerland.
- For pharmaceutical preparations and substances (5) BRYREL, 830,503, by Winthrop Products, Inc., New York, U.S.A. CASMALON, 832,175, by Laboratoires Cassenue, S.A., Paris 8e, France.
- For insecticides, fungicides, herbicides and weed-killing preparations (5) ROQUAT, 830,889, SPERSICOL, 832,202, by Plant Protection, Ltd., London, S.W.1, and Yalding, Kent.
- For pharmaceutical preparations and substances for human and veterinary use; sanitary substances and disinfectants (5) ATROMID, 831,065, by Imperial Chemical Industries, Ltd., London, S.W.1.
- For sanitary substances and disinfectants (5) STATUS, 832,290, by New Hygiene, Ltd., London, N.7.
- For electric razors and electric hair clippers, none being battery operated (8) EVER READY, 825,931, by Ever-Ready Razor Products, Ltd., London, W.C.1.
- For photographic, cinematographic, optical, measuring, signalling apparatus and instruments, etc., and parts (9) SUPRAGRAPH, 828,711, by Zeiss-Aerotopograph, G.m.b.H., Munich 27, Germany.
- For baby soothers, and teats and valves for feeding bottles (10) MARILYN, 831,881, by Lewis Woolf, Ltd., Selly Oak, Birmingham, 29.
- For sponges made from foamed plastics (21) TRULON, 831,085, by Declon Sponges, Ltd., Potters Bar, Middlesex.
- For food prepared from milk, for infants allergic to milk (5) ALLERGILAC, 820,674, by Cow & Gate, Ltd., Guildford, Surrey.

From the "Trade Marks Journal," June 20

For vitamins and vitamin preparations being chemical substances for use in the pharmaceutical industry (1)

- PFIZER CRYSTALETS, 819,581, by Chas. Pfizer & Co., Inc., Brooklyn, New York, U.S.A.
- For all goods (1) KETODASE, 824,661, by Warner-Lambert Pharmaceutical Co., Morris Plains, New Jersey, U.S.A.
- For diagnostic reagents (1) URASTRAT, 824,662, by Warner-Lambert Pharmaceutical Co., Morris Plains, New Jersey, U.S.A.
- For diagnostic reagents for use in laboratory tests in connection with the blood (1) VERSATOL, 824,663, by Warner-Lambert Pharmaceutical Co., Morris Plains, New Jersey, U.S.A.
- For perfumes, non-medicated toilet preparations, and cosmetic preparations (3) LE BAISER, 802,264, by Juliette Rica Baudecroux, Paris, 17e, France.

PATENTS

COMPLETE SPECIFICATIONS ACCEPTED

From the "Official Journal (Patents),"

June 20

- Production of vaccines. Wellcome Foundation, Ltd., 902,760.
- Combined antibiotic and mycocide. C. G. Shaw, 902,725.
- Process for preparing from vegetable sources a medicine effective against skin diseases. Y. Saito, 902,936.
- Rh blood typing serum. Takeda Pharmaceutical Industries, Ltd., 902,693.
- Anticoccidial compositions. Norwich Pharmacal Co., 903,076.
- Process for producing L-glutamic acid by fermentation. Ajinomoto Kabushiki Kaisha, 903,052.
- Sulphonamides. Merck & Co., Inc., 902,881.
- Testing of water by the use of reagents in tablet form. Wilkinson & Simpson, Ltd., and A. T. Palin, 902,884.
- Cyclic organophosphorus compounds and method of preparing same. American Cyanamid Co., 902,801.
- Phosphonitrilic compounds. Imperial Chemical Industries, Ltd., 903,046.
- Organic dithiophosphinic compounds and the preparation thereof. American Cyanamid Co., 902,802.
- Nitrofurantoin salts. Norwich Pharmacal Co., 902,692.
- Purification of compounds which sublime. Eastman Kodak Co., 903,035.
- Process for preparing a dextro-ortho-metha-1(7), 5,8-triene-3-ol, a physiologically active product. Givaudan & L. Cie, S.A., 903,058.
- Penicillins. Beecham Research Laboratories, Ltd., 902,703.
- Process for the production of hydrazine derivatives. Farbenfabriken Bayer, A.G., 902,711.
- Secondary phosphine sulphides and method of preparation. American Cyanamid Co., 902,803.
- 6-substituted (or unsubstituted)-2-alkyl-3-allythiomethyl-7-sulphonyl-3,4-dihydrobenzothiadiazine dioxides and process for preparation. Chas. Pfizer Co., Inc., 902,658.
- Process for the production of a derivative of thebaine. J. F. Macfarlan & Co., Ltd., 902,659.
- Recovery of an antibiotic. Upjohn Co., 902,807.
- Antibiotic derivatives. Soc. Farmaceutici Italia, 902,992.
- Steroid compounds, preparations thereof and compositions thereof. Chas. Pfizer & Co., Inc., 903,049.
- Salts of chloroisocyanuric acids, compositions containing same, and process for preparing same. Monsanto Chemical Co., 902,764.
- Dyed surgical gut and process for producing it. Ethicon, Inc., 902,813.
- Pressurised douche applicator. M. E. Bowen, 902,697.
- Bovine obstetric appliances. H. A. Colbear, 902,698.
- Means for use in the display of goods in shops or for like purposes. M. Myers & Son, Ltd., 902,831.
- Model of a human head for demonstration purposes. Brook Airway, Ltd., 903,022.
- Hair-setting composition. Gillette Co., 902,808.
- British patent specifications relating to the above will be obtainable (price 4s. 6d. each) from the Patent Office, 23 Southampton Buildings, Chancery Lane, London, W.C.2, from August 9.

CONTEMPORARY THEMES

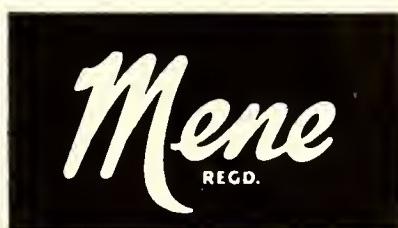
Subjects of contributions in current medical and technical periodicals

- THERAPEUTIC TRIALS in multiple sclerosis. *Brit. med. J.*, June 23.
- STEROID THERAPY in chronic bronchitis. *Lancet*, June 23.
- AN ORALLY ACTIVE ANDROSTERONE. Reduction of serum lipid and uric-acid levels by. *Lancet*, June 23.
- ANDROSTERONE WITH ETHYL CHLOROPHENOXYSOBUTYRATE. Experimental evaluation of an orally active combination of. *Lancet*, June 23.
- DIETARY CORN OIL. Effect of, on lipæmia in diabetic children. *Lancet*, June 23.
- BARBITURATES. The abuse of, in the United Kingdom. *Bull. Narcot.*, April-June.

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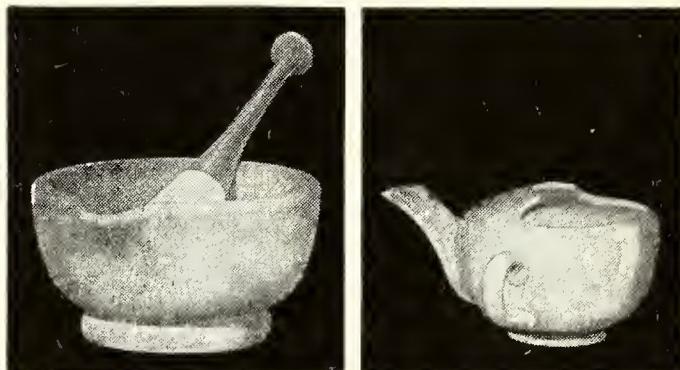


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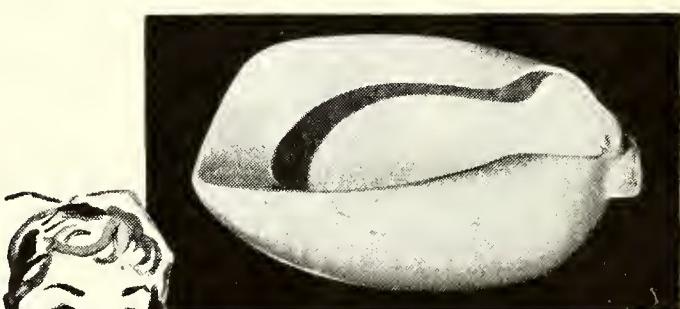
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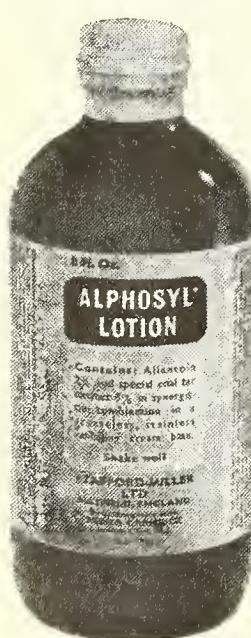
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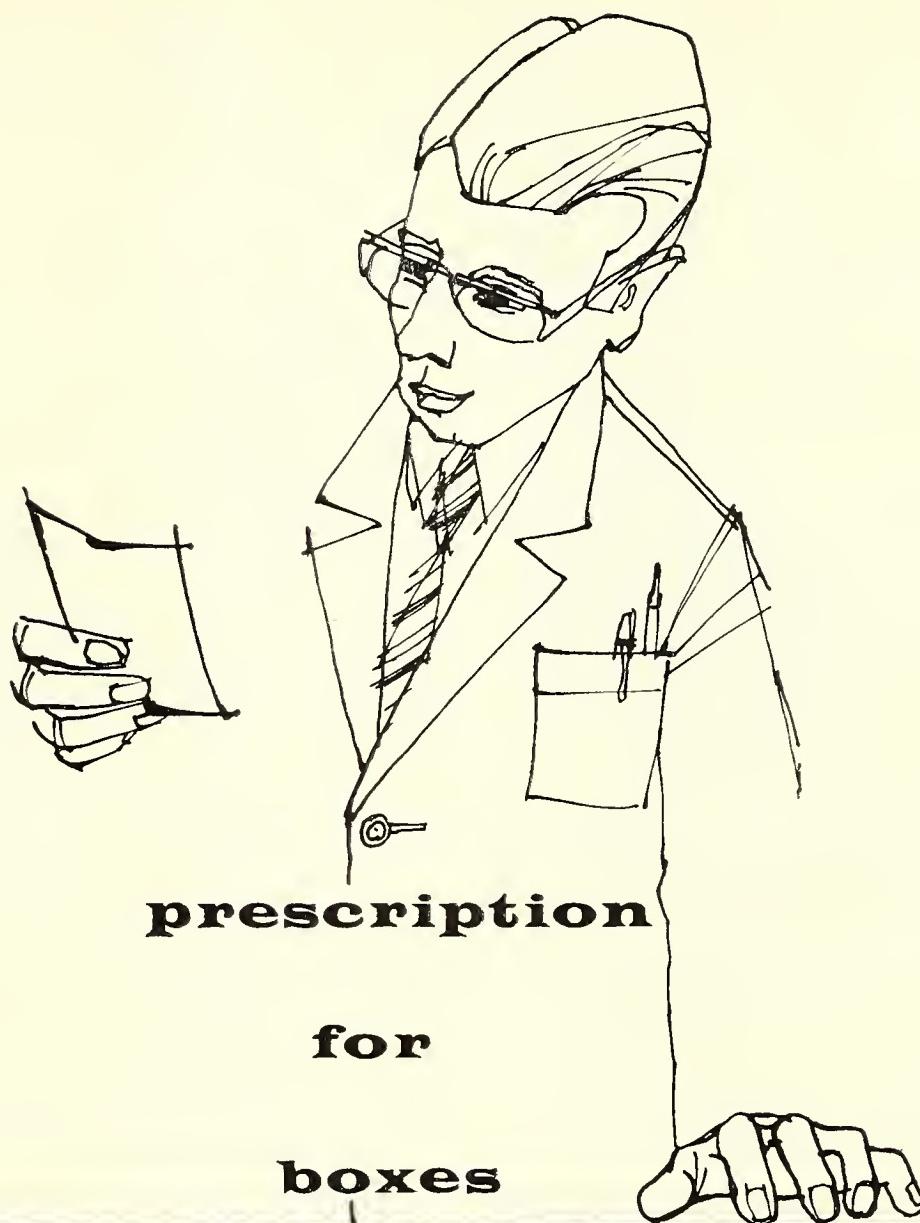
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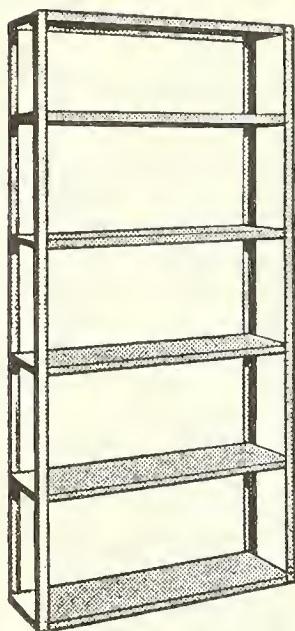
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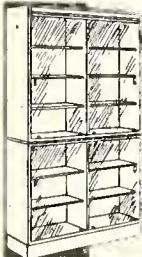
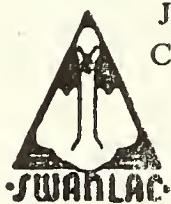
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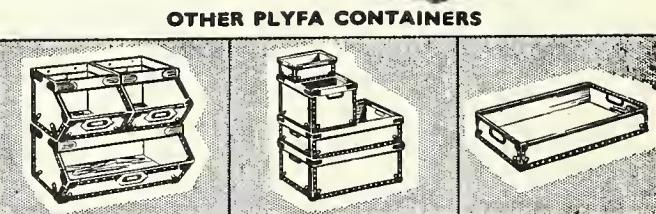
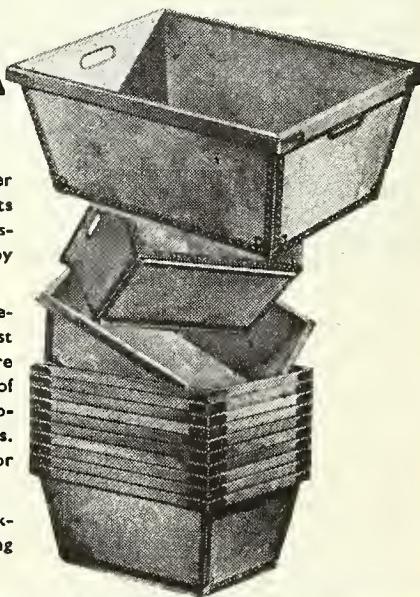
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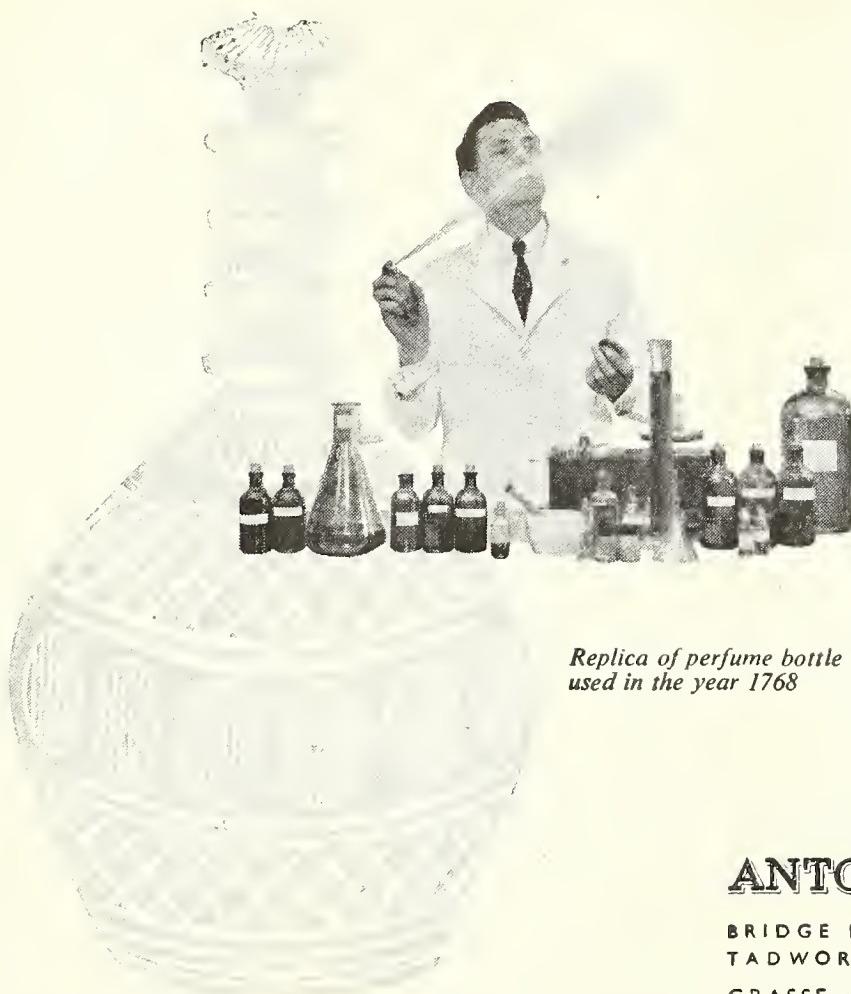
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required for eight weeks from July 9, 1962. Salary 18 guineas per week. Modern new department. Applications to the Chief Pharmacist (Telephone STE. 4251). C 7443

LONDON JEWISH HOSPITAL, STEPNEY GREEN, E.1 (Category II)

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required at the above hospital from July 9, 1962. Modern new department offering good general experience. Every third Saturday morning off. Salary scale and conditions of service in accordance with Whitley Council agreement. Applications in writing stating age, qualifications and previous experience, together with names of two referees, to the Chief Pharmacist. C 7444

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Assistant-in-Dispensing

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Applications to Chief Pharmacist, Newmarket General Hospital, Newmarket. C 7509

Appointments—Continued**OAKWOOD HOSPITAL,
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Applications are invited for the whole-time appointment of a Chief Pharmacist (Category III—£970 to £1,290 per annum) at this large progressive psychiatric hospital. The successful applicant will take charge of a new Pharmacy which is planned. Whitley Council salary scales and conditions apply.

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**OAKWOOD HOSPITAL,
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(full or part-time) required at the above Hospital. Salary and conditions of service in accordance with the Pharmaceutical Whitley Council regulations.

Applications, stating age, qualifications, full details of experience and the names of two persons for reference, to be sent to the Secretary. C 7484

**ROYAL EYE HOSPITAL,
ST. GEORGE'S CIRCUS, S.E.1****Locum Pharmacist**

required for summer months. Apply to Secretary (WATERLOO 4477). C 7506

**STEPNEY GROUP HOSPITAL
MANAGEMENT COMMITTEE,
MILE END HOSPITAL,
BANCROFT ROAD, LONDON, E.1****Post-graduate Student Pharmacist**

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**THE LONDON HOSPITAL,
WHITECHAPEL, E.1****Locum Pharmacist**

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**THE ROYAL HOSPITAL,
WOLVERHAMPTON****Senior Pharmacist**

required. Applications with names of two referees to Hospital Secretary from whom further details may be obtained. C 7501

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C 7508

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C 7486

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Applicants should have a sound pharmaceutical or related background and, no less important, a flair for and ability in writing clear attractive English.

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THE STAFF MANAGER,
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C 7471

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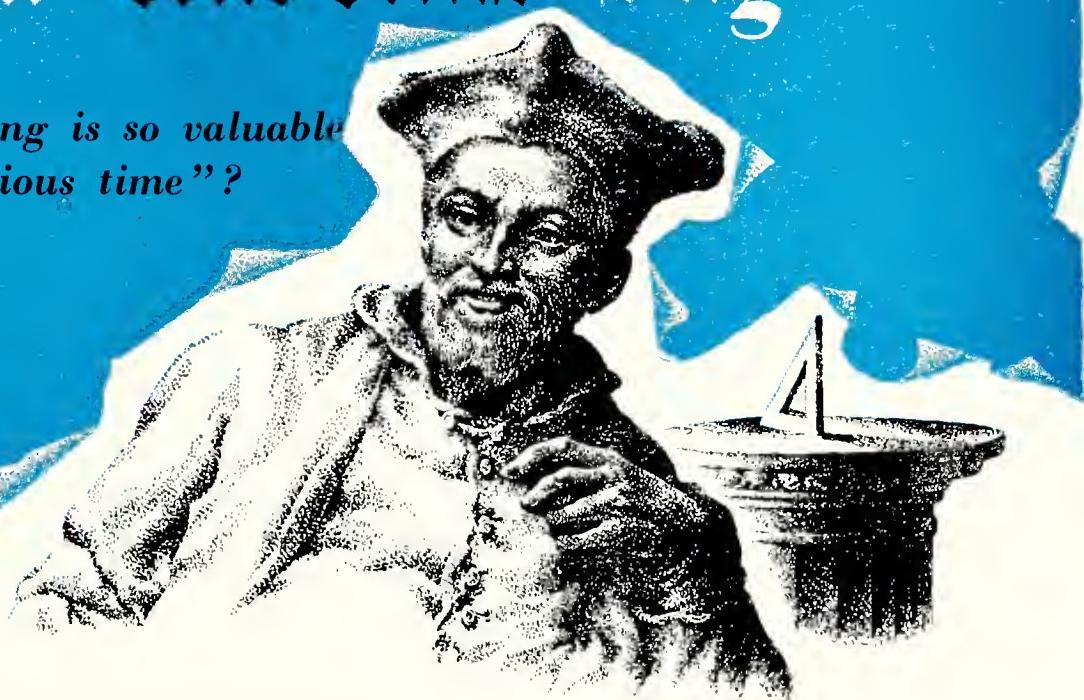
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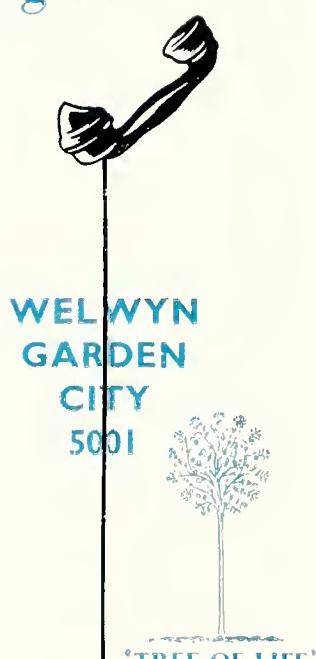
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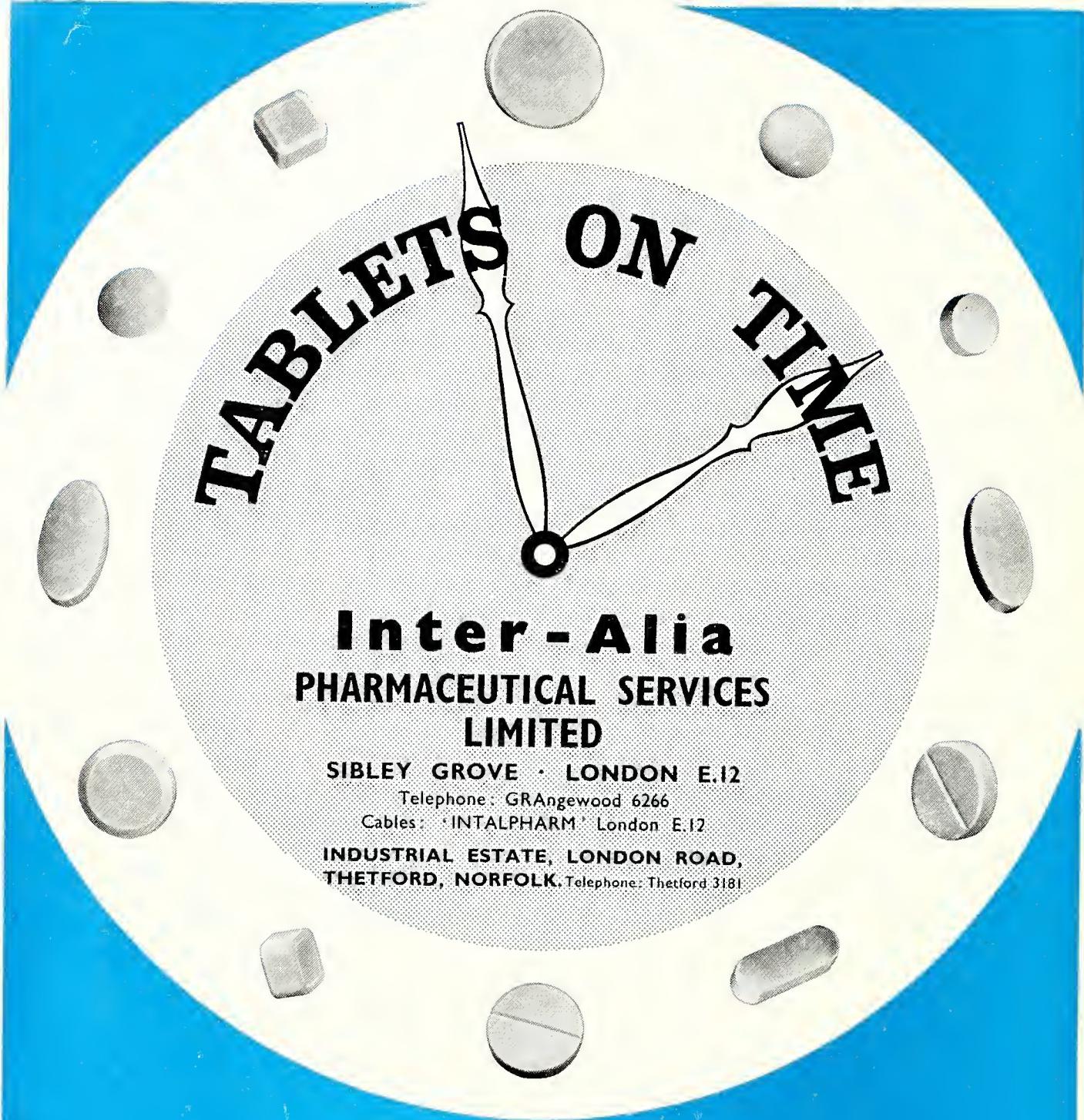
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* What Rabelais actually wrote was :

"Rien si cher ne précieux est que le temps"



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